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YEMEN: Archaeological Activities in the Yemen Arab Republic, 1985
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ARCHAEOLOGICAL MISSIONS

YEMEN

Archaeological Activities in the Yemen Arab Republic, 1985

The third (1985) campaign of archaeological cooperation between Italy and the Yemen Arab Republic took place in north Yemen from 4 July to 17 December 1985.

Under the coordination of the 'Centro di Cooperazione Archeologica Italo-Yemenita' (Italo-Yemenite Centre for Archaeological Cooperation) of Ṣan'ā' in collaboration with the Organization for Antiquities and Libraries under the direction of *qāḍī* Ismā'īl al-Akwa', work was carried out by the following Italian experts sent by the Department for Cooperation and Development of the Italian Ministry of Foreign Affairs: Professor Alessandro de Maigret, programme director, for the pre-Islamic period; Professor Francesco Fedele for the neolithic period; Professor Maurizio Tosi for the protohistorical period; Professor Umberto Scerrato, Professor Giovanna Ventrone and Professor Paolo Cuneo for the Islamic period; Dr Grazia Maria Bulgarelli for the paleolithic period; Dr Francesco Di Mario for the lithic industry; Dr Lorenzo Costantini for paleobotany; Dr Vincenzo Francaviglia for mineralogy; Dr Alberto Palmieri for sedimentology; the architects Vincenzo Labianca and Edoardo Gatti for architectural survey; the surveyor Mario Mascellani for topography; Ms Patricia Smith for drawings; Mr Antonio Solazzi for the photographs. Assistance was also provided by the following consultants: Dr Bruno Marcolongo for geomorphology and Dr Adolfo Gianni for ethnoarchaeology. The students Sabina Antonini, Bruno Castiello, Michael Jung, Marina Marini and Marina Serapioni also helped with the digging and recording of finds. Ms Beate Terfloth collaborated in the graphic representation of objects found.

The following officials of the local Antiquities Department followed the various stages of survey and excavation and took part in the work: al'Izzī Muḥammad Musliḥ, 'Abd ar-Razāq Na'mān as-Šarǧabī, 'Uṯmān al-Ḥalīfah, Ismā'īl al-Kibsī, Aḥmad Šamsān, Sayf Ḥussayn Mas'ad, Muḥammad al-Ḥalabī, 'Abd al-Karīm al-Kibsī, Yaḥyah.

The Ṣan'ā' Centre for Cooperation and the main sites were visited, chronological in order, by Professor Gherardo Gnoli, President of IsMEO (17-30 October); the Minister for Foreign Affairs of the Y.A.R., Dr 'Abd al-Karīm al-Iryānī (18 November) and the Undersecretary of State for Foreign Affairs of the Italian Republic, the Hon. Bruno Corti (13-15 December), who took the opportunity of finalizing the agreement for archaeological cooperation for the remaining years of the programme.

The main results obtained by the Italian group were illustrated at an exhibition/congress held on 30 October at the Ṣan'ā' Sheraton Hotel, which was organized by

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the Italian Embassy and the Organization for Antiquities of the Y.A.R. The address on 'Activities and Discoveries of the Italian Archaeological Mission: years of cooperation 1983-85', introduced by *qāḍī* Ismā'īl al-Akwa' and Professor Gherardo Gnoli, was given by Professor Alessandro de Maigret, and contributions were also made by Professors Maurizio Tosi and Francesco Fedele.

From 1-7 December a RAI-Radiotelevisione Italiana team paid a visit to film the Centre and the most important antiquities discovered by the Mission.

In the light of the findings made during the year's activity, and considering the cultural unity prevailing in southern Arabia during the south Arabian classical period, the campaign concluded with contacts with the authorities of Yemen (People's Democratic Republic of Yemen) in order eventually to conduct surveys in this country as well. On the invitation of the local Antiquities Department, Professor A. de Maigret, who on this occasion joined the Italian Delegation of the Ministry for Foreign Affairs led by the Hon. Bruno Corti on an official visit to Democratic Yemen, visited Aden from 17-20 December. Subsequent to talks with the local Director-General of the Yemenite Centre for Cultural and Archaeological Research, Mr 'Abdallāh Muḥayriz, and the Director General of Antiquities and Museums, Dr 'Abdāllah Bawazīr, we found the Democratic Yemen authorities perfectly agreeable to establishing contact with the IsMEO Archaeological Mission and, in particular, to promoting a specific research plan for the following year.

As regards the Yemen Arab Republic (north Yemen), the following is a sector by sector outline of the main scientific activities carried out during the season.

1. *Exploration of the Banī Ḍabyān Region*

a. The Survey

A survey was carried out in the unexplored region occupied by the Banī Ḍabyān tribe from 22-26 July 1985. Dr Francesco Di Mario, Dr Vincenzo Francaviglia, the representative from the Antiquities Department 'Uṯmān al-Ḥalīfah and the author conducted the survey. The aim of the trip was to study the way the patterns of ancient settlements varied in relation to changes in the environment, and to ascertain the extent of Sabaean occupation along the upper and middle course of the Wādī Ḏanah.

The region of eastern Ḥawlan (Banī Ḍabyān) is mountainous and almost inaccessible, and the road we took to cross it is one of the few, possibly the only one, that can be covered with relative ease. Turning south from the Ṣan'ā'-Ġihānah-Ṣirwāḥ road, a few kilometres before the village of Banī Sulayḥ (al-A'rūš) (fig. 1), one enters the Wādī al-'Aṭfah, to leave it on the left after about 15 Km. The route proceeds southwest along the Wādī Kunam as far as the Wādī Ḥabābiḍ, not far from the village of Qalīl. The road then follows the Wādī Ḥabābiḍ to the point at which it crosses the Wādī 'Arādiq, coming from the direction of the village of Ḥusn Mašmal which lies to the west. The road then leaves the Wādī Ḥabābiḍ to enter the Wādī Baw, which stretches due southeast. The recently built but nonetheless difficult road then traverses a series of precipitous mountain passes from the Wādī Baw basin to the Wādī Nab'āh basin further south, not far from the village of Sām. At this point the road becomes comparatively easy to follow, keeping to the river valleys as far as Marib.

Beyond the confluence of the Wādī Sarriayn (from the south) (fig. 2) and of the Wādī Ḥabābiḍ (from the north), we come out into the Wādī Sabā' (or Ḏanah) at the point where the Wādī Raḥābah joins it from the south. Following the Wādī Sabā', northwards from this point, a change is observed in the scenery: we are in the physiographical area of the so-called 'medium altitudes', and the temperature, pedology, geomorphology and vegetation contrast sharply with the 'eastern plateaux' scenery lying behind us in the west. This ecological

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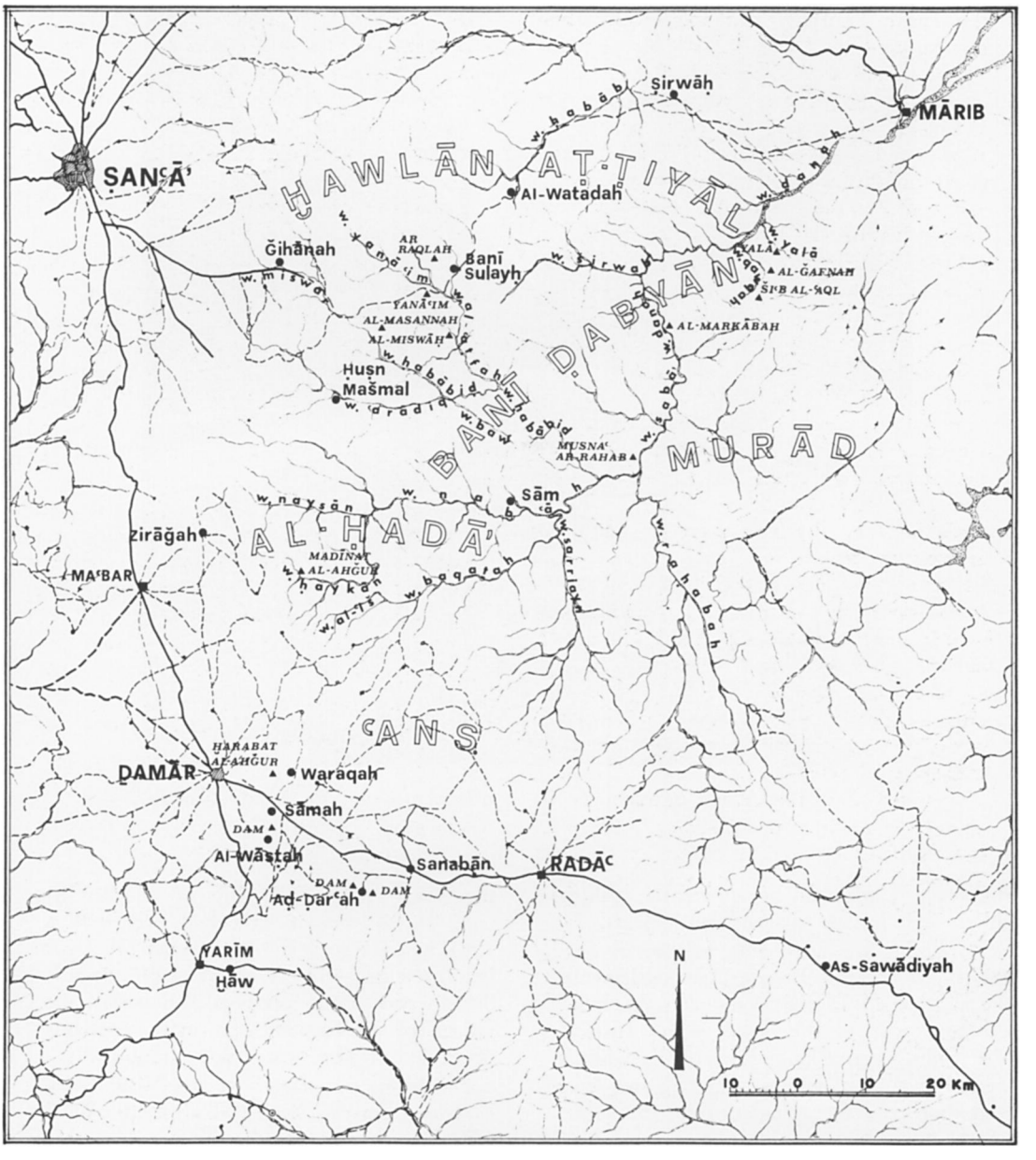

Fig. 1 - Map showing sites belonging to the pre-Islamic period visited by the Italian Archaeological Mission during the 1985 campaign.

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Fig. 2 - The Wādī Sarriayn at its confluence with the Wādī Nab'āh.

difference is matched by apparently striking differences in the ancient settlements.

As far as we were able to see, in fact, the protohistorical Bronze Age settlements, so widespread in the A'rūš and Al-Ḥadā', do not occur in this lower area. Instead, the typical squared-stone ruins of the Sabaean period begin to appear, standing out here and there and then clustering on the slopes of the vast Wādī Sabā' valley.

The change in archaeological *facies* seems quite abrupt, as if in the past the unbroken Banī Ḍabyān mountain range had constituted an obstacle to the spread of the two cultures in diametrically opposed directions. In the lower-lying parts the last protohistorical flints and obsidians were found along the Wādī 'Aṭfah (the site of Al-Miswāḥ) (fig. 3). A similar case had occurred in 1981 when a survey further north of A'rūš led us along the Wādī Ḥabāb towards Ṣirwāḥ and Mārib; once we had passed the village of Al-Watadah, no more remnants of lithic industry were to be found.

Following the stretch of the Wādī Sabā' running from the Wādī Nab'āh to the Wādī Širwab, we were able to explore only two sites. However, systematic surveys of the lateral valleys of the *wādī* may well show far more concentrated settlement. In fact, in a valley to the left of the Wādī Sabā', a few kilometres to the north of the point where it crosses the Wādī Nab'āh, we found a sort of fortress set high on two

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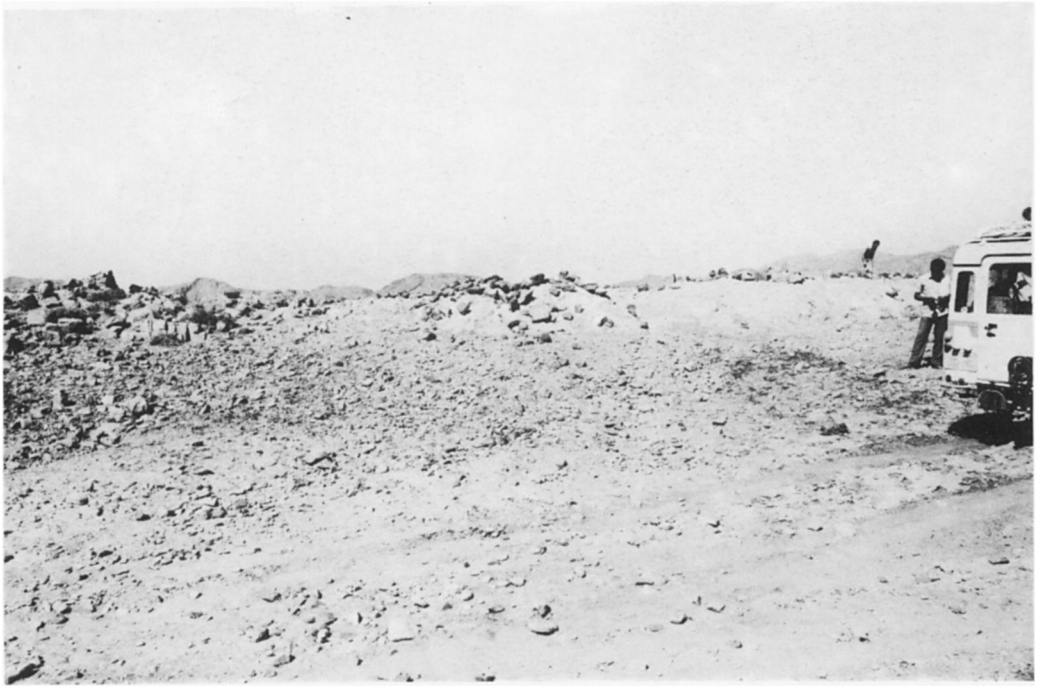

Fig. 3 - Section of the protohistorical site at Al-Miswāḥ (Wādī ʿAṭfah).

spurs at the sides of a *wādī* (Wādī Raḥab), known by the name of Musnāʿ ar-Raḥab (fig. 4). We had no time to collect surface samples, but both the construction technique and the type of inscriptions engraved at the bases of the rock spurs place the complex in the Sabaean period.

Another example of a defensive construction was a small fortress we visited called Al-Qaṣr (fig. 5). It stands on a peak on the left side of the Wādī Sabāʾ 5 km. north of the Wādī Nabʿāh confluence. There are many examples of such fortified places, dotted along the course of the *wādī* like look-outs.

Further to the north of the Wādī Danah bed, in a raised position around which the *wādī* forks for a short stretch, there is a site that must have been used for dwellings rather than for defence. It is called Al-Markābah and is relatively large (*c.* 250 × 70 m.). Given the thick clustering of ruins, even on the slopes of the island, the settlement must have been very concentrated (fig. 6). It is for the time being hard to fix the period in which this small town flourished, partly because, when the elevated parts, which must have been made of earth, fell down, they buried the pottery deep amidst the stone foundations of the houses.

At the level of the Wādī Qawqah which joins the Wādī Danah on the right about 30 km. from Mārib, we left the road in the main *wādī* to explore the region stretching north of the Ǧabal as-Saḥl. Following a track

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Fig. 4 - The Musnā'ṭ ar-Raḥab.

Fig. 5 - The ruins of Al-Qaṣr in the Wādī Sabā'.

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Fig. 6 - View of the ruins at Al-Markābah.

Fig. 7 - Ši'b al-'Aql: a Sabaean Villa.

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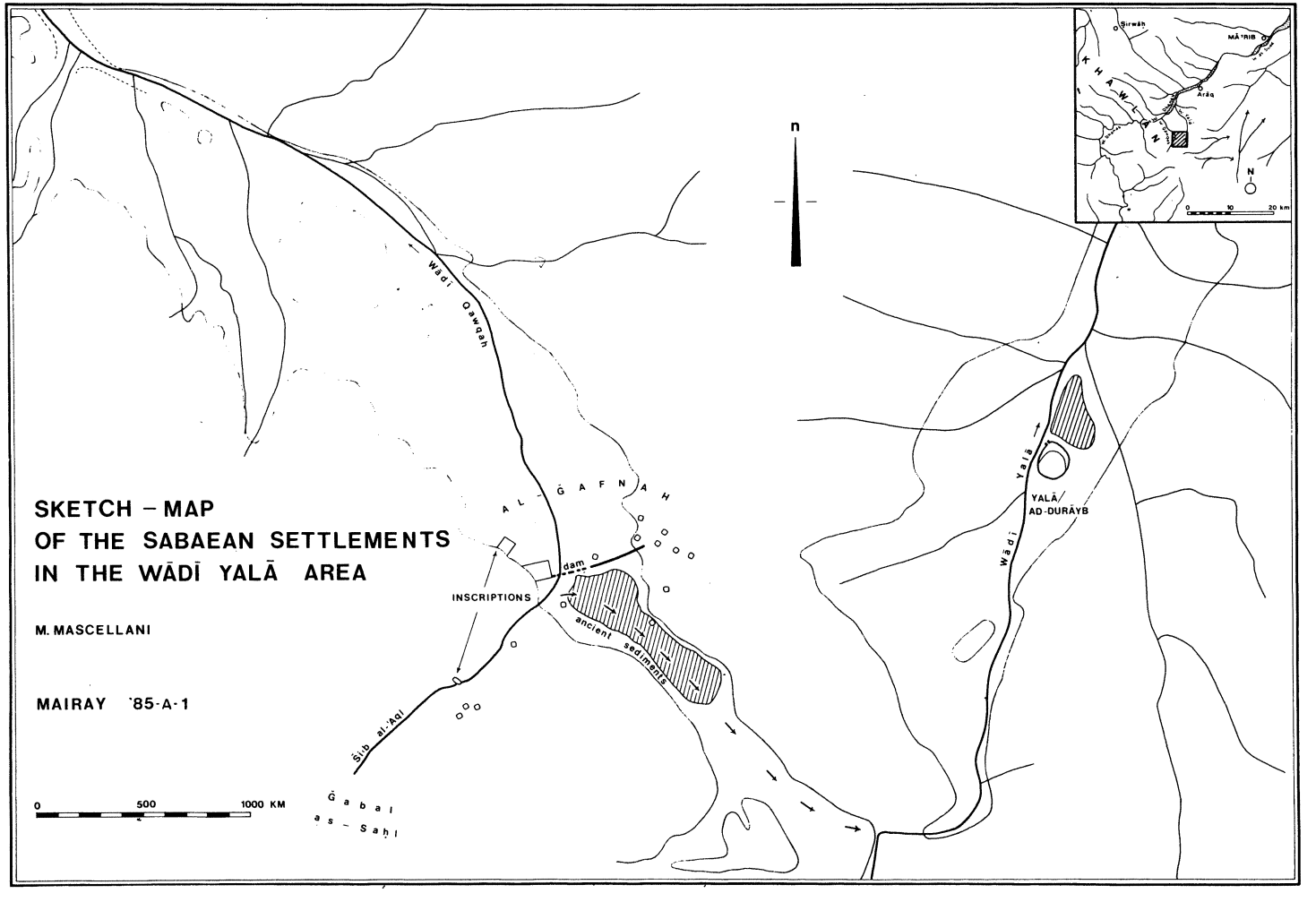

Fig. 8 - Map showing the distribution of antiquities in the Wādī Yalā area.

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along the Wādī Qawqah we found many important Sabaean ruins in the area between the track and the Wādī Yalā. It is worth describing these in some detail.

b. The Sabaean Antiquities in the Wādī Yalā Area

The Sabaean antiquities in the Wādī Yalā area are situated within the territory of the Āl-Ṭāhir, a subtribe of the Banī Ḍabyān, about 35 km. southwest of Mārib. They are concentrated along two short right tributaries of the Wādī Danah: the Wādī Yalā and the Wādī Qawqah. We are sure that we will not be contradicted when we state that the site is, after that of Mārib, one of the most complete and important Sabaean archaeological units discovered up to the present time. After a first visit (25-26 July), two surveys were performed in the site (5-10 August and 2-5 September) to complete the archaeological (A. de Maigret, F. Di Mario, S. Antonini, M. Marini), architectural (V. Labianca, E. Gatti, M. Mascellani, P. Smith) and geomorphological studies (B. Marcolongo, A. Palmieri, V. Francaviglia). 'Uṯmān al-Ḫalīfah and Al-'Izzī Muḥammad Musliḥ participated in the scientific work for the Y.A.R. Antiquities Organization.

The site consists of three distinct groups of structures (Ši'b al-'Aql, Al-Ġafnah and Yalā/Ad-Durayb) interrelated by a common hydrological factor (fig. 8). In fact, all the

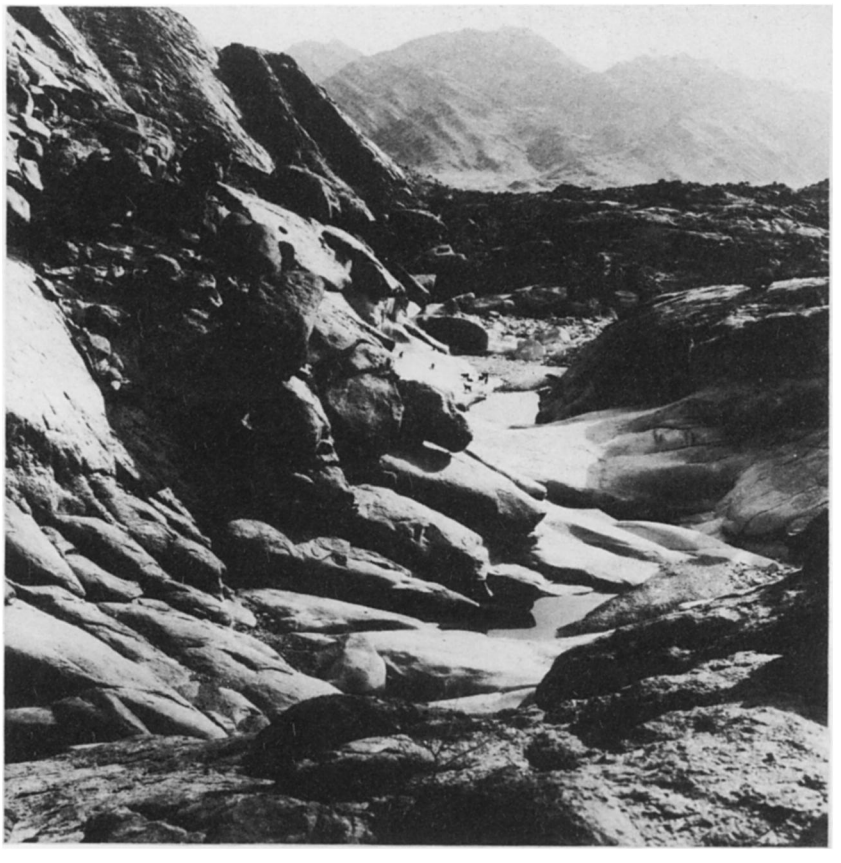

Fig. 9 - View of Ši'b al-'Aql looking northeast.

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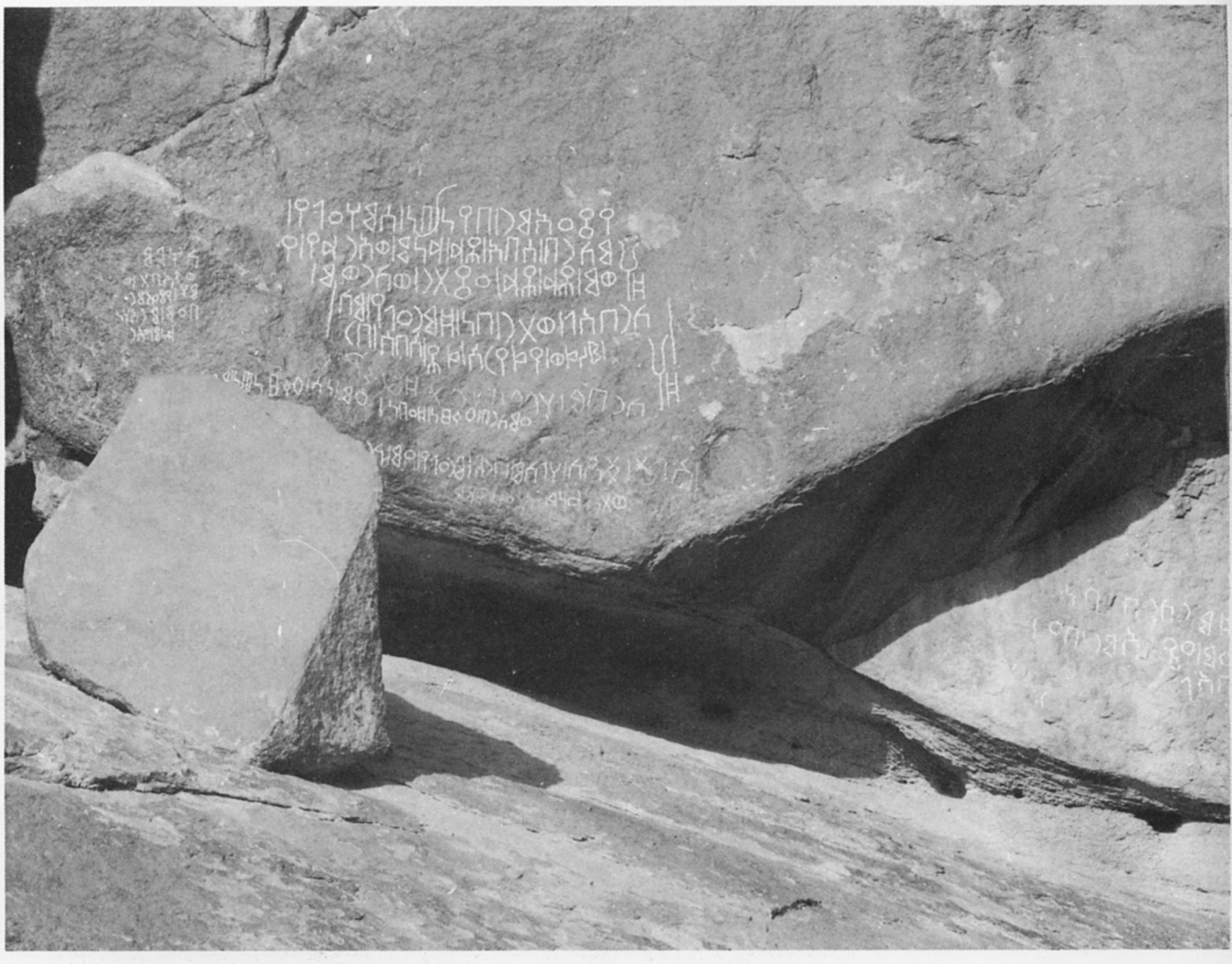

Fig. 10 - Šiʿb al-ʿAql: rupestrian

antiquities situated along the courses of the Wādī Qawqah and the Wādī Yalā seem to exploit the same water source, flowing down from the highest mountain of the region: the Ǧabal as-Saḥl (or Ǧabal Murād).

The first group of structures, which is also the most elevated, is set in the granite rocks of the Šiʿb al-ʿAql (Wādī Qawqah). Near the entrance to the gorge we found an interesting small Sabaean villa with a monumental staircase and three complete windows in the facade (fig. 7). The squared stones of the construction are simply hewn, but are joined with great accuracy, and the house stands complete up to its roof level. After ascending about 300 m. of the very charming *šiʿb*, where frequent pools embellish the extraordinary landscape of oddly shaped pink rocks (fig. 9), we reach a natural pool isolated in the middle of a widening of the *wādī*. Some steps carved out of the basin sides, two squared post-holes cut into the edge, as well as a platform at the level of the water's edge, show its ancient use as a bathing pool. Its importance in ancient times is indicated by numerous Sabaean inscriptions engraved on flat vertical rocks surrounding the ablution pool to the north and south (fig. 10). Dr Muṭahar al-Iryānī and Professor Giovanni Garbini are now

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inscriptions of the Sabaean period.

studying the 28 new inscriptions from the site, which refer to a ritual hunt practised here by the two *mukarribs* Yt'mr Byn and Krb'l Wtr.

Going up a flight of stairs to the south of the inscriptions, we reach an artificial earthen platform set up on the rock, supported by a round terracing wall. In the middle of this elevated place are the ruins of a curious structure that stood on three thick parallel walls of different lengths (fig. 11). Two isolated houses, situated nearby, are reached by means of paved paths with stairs, beginning at the southern and eastern sides of the platform. The presence of a pre-Islamic tomb at the northern edge of the terrace, and fragments of a limestone basin found near the central building, as well as the impressive view to be enjoyed from this point, lead us to assume a sacred or ritual function for the complex.

Our geologist Dr Bruno Marcolongo noted that before the beginning of the Pleistocene period the final part of the Wādī Danah had a more southerly course than today. Before tectonic activity forced it into its present hydrographic pattern, the Wādī Danah flowed in the area of our sites, making use of the big fault which today lodges the Wādī Qawqah river bed. The

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ancient Sabaeans noticed the wide delta plain of sediment left by the palaeo-Danah, and with their exceptional hydraulic skills they succeeded in exploiting it for agricultural purposes.

The site of Al-Ğafnah is found on sedimentary deposits and the structures we surveyed had been conceived to exploit them. A stone dam was constructed on the Wādī Qawqah in order to collect the rich source of water flowing from the Ši'b al-'Aql, thus preventing its loss westward to its natural rocky river bed, and conveying it for irrigation to the sediment lying to the east. The remains of the dam are still clearly visible (fig. 12). It was not necessary to build a very strong structure because the Sabaeans chose to locate the dam where the waterflow was less violent, that is, along the watershed between the hydrographic basins of the Wādī Qawqah and the Wādī Yalā. A long constraining wall was constructed to extend the functions of the dam northward along the delicate line of the watershed.

To the south the dam stood on the corner of a wide quadrangular area bounded by finely constructed walls. Among the numerous ruins we were able to identify some partition walls inside the major squared area. In particular we noticed a more elevated rectangular structure, limited by the rocks at its southern end. A gate at a right angle gave access to this intricate structure whose function is difficult to hypothesize at present. A flight of stairs outside the gate led down to the pond created by the dam. This fact strengthens the connection between the structural unit and some of the activities carried on in the Al-Ğafnah according to the specific hydraulic arrangement of the region.

We found about 20 Sabaean houses in the Al-Ğafnah area. These houses are not grouped together in a true village but are spaced out and scattered over the rocks at the foot of the mountains flanking the sedimentary basin. This particular distribution indicates a settlement pattern suited to the agricultural exploitation of the various fields at that time. Thus, with the exception of a building set up along the control wall, which was probably a guard-house, we can guess that these Sabaean houses were farms. Some are quite large and articulated (fig. 13). Wide, enclosed threshing floors and storerooms support this assertion.

About 300 m. west of the Al-Ğafnah complex we discovered, resting on the mountainous flank of the Wādī Qawqah, and protected from sight by a rocky spur, a wide rectangular fortified area. Reutilized in the early Islamic period, the stronghold was first conceived in the Sabaean period. Evidence for this is provided by seven short inscriptions engraved in the rocks near the western gate. Moreover there are architectural features similar to the Al-Ğafnah structures. The complex must have been devised probably to lodge a garrison against attacks from the west along the Wādī Qawqah, the only access from the Wādī Danah to the Sabaean sites in question.

After irrigating the fields of Al-Ğafnah, the water of the Wādī Qawqah followed the Danah palaeo-river bed joining that of the Wādī Yalā after about 2 km. In this way it increased' its flow, which is relatively lighter than that of the Wādī Qawqah (as can be observed at the present time); and this was enough to supply the large ancient city known today as Yalā/Ad-Durayb.

The Sabaean centre consists of a walled city of a subcircular shape (fig. 14), with a maximum diameter of 230 m. The stone walls have a regularly buttressed course (4.5 m. for the buttresses, 4 m. for the recesses). At about 2.5 m. from its base the wall, which is 1.8 m. thick, shows an interior horizontal *plan*, which reduces the thickness of the structure at this point to about 60 cm. Assuming this thinner wall to have been conceived to protect a standing man within, we can reconstruct a total elevation of about 4.5 m. for the wall of Yalā.

The wall *enceinte*, well preserved at its northern and eastern sides, is partially destroyed to the south and to the west by the recent excavation of a water channel

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Fig. 11 - Ši'b al-'Aql: central structure of the sanctuary.

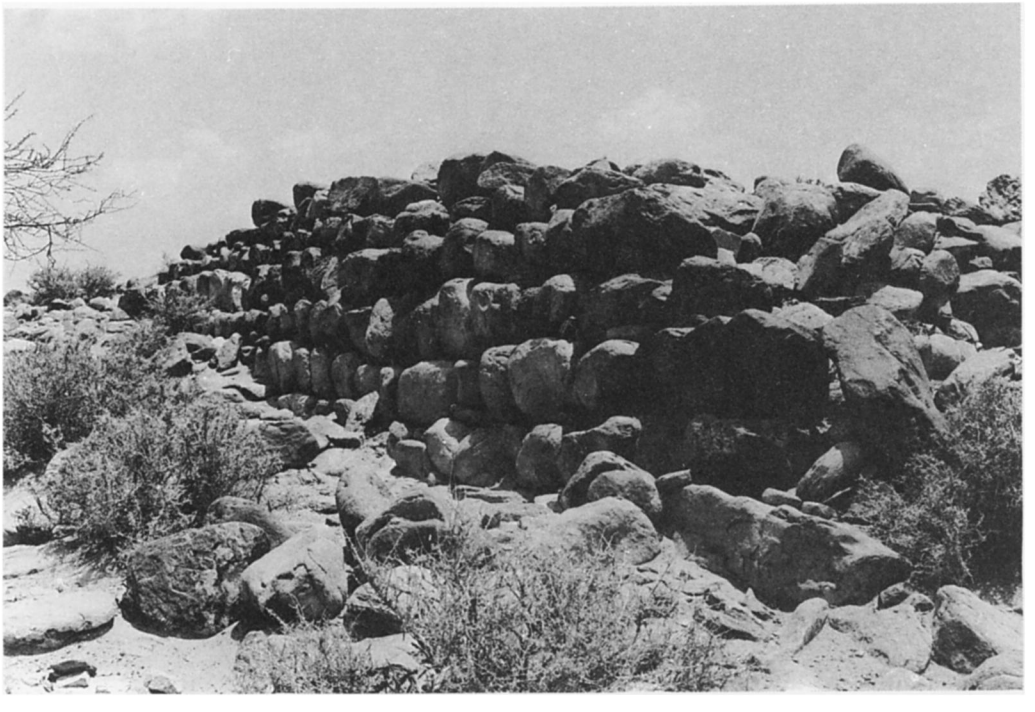

Fig. 12 - Al-Ğafnah: northeast end of the dam.

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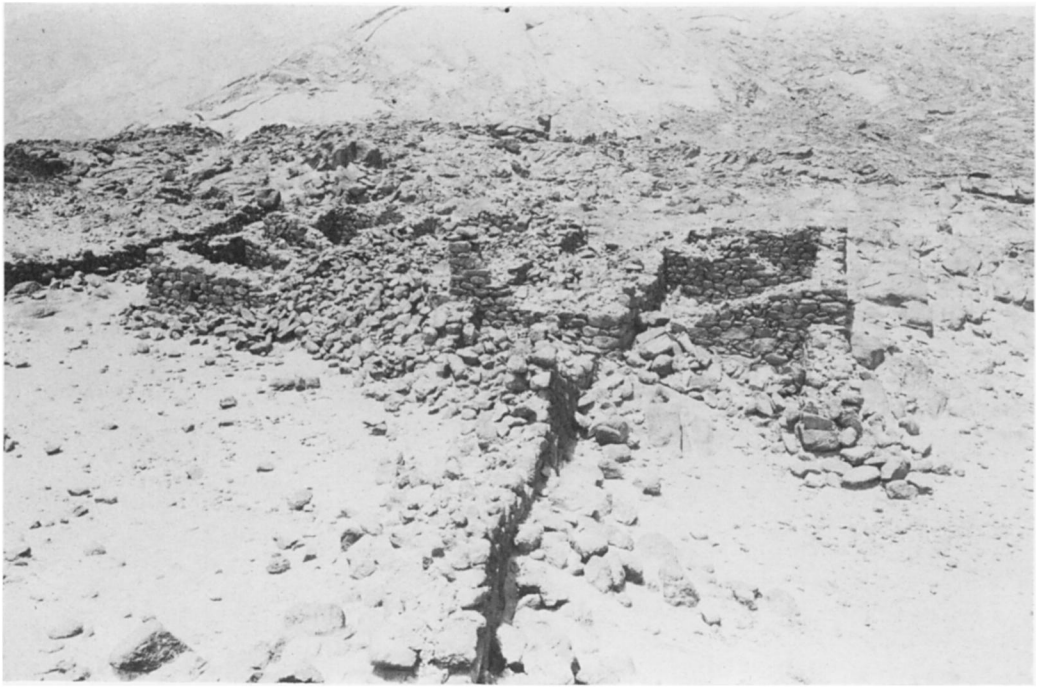

Fig. 13 - Al-Ğafnah: farm.

Fig. 14 - Yalā/Ad-Durayb: view of the town from the east.

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to irrigate the fields of a small modern village to the north of the ruin.

The main city gate was situated to the northeast, where the two parallel rectangular towers recall the entrance system of Barāqiš. On the western flank of the city a slope is formed by large blocks running parallel to the walls, leading to a secondary passage, perhaps of a later period.

The architectural techniques do not differ from those of the other Sabaean structures seen at Al-'Aql and Al-Ğafnah: the yellowish roughlyhewn granite blocks are accurately set up in successive levelled rows. A square tower 8 m. high and a rectangular enclosure wall, situated against the northern city wall, are of a later period (possibly Islamic) suggested by the dissimilarity of its structures and by the inscribed Sabaean blocks inserted in the walls.

The most interesting feature of the complex is the interior ruin that leaves the northern part of the city free. The ruin is particularly high, and a section of it, visible on the southwestern side of the city, shows its anthropic origin. The black granite on the surface contrasts with the yellowish granite of the city wall.

It seems clear that the city was originally smaller before the fortified walls encircled it, protecting, among others, some structures (a temple?) that were noted in the northwestern sector. The considerable thickness of the interior ruin and the stratigraphy visible in the southwestern section, both suggesting a succession of occupations, indicate the importance of a future excavation of the inner city itself. An inscription found set into a small modern house to the north near the Islamic structures, refers to the construction of fortifications (the city walls?) by Yt''mr and Yd''l. The latter is not mentioned in the rock inscriptions of Al-'Aql, where we found only Krb'l Wtr and Yt''mr Byn. The epigraphic study has not yet been completed but this observation seems to confirm that the city walls are later than the interior ruin and to suggest they may possibly be contemporary with the Al-'Aql antiquities.

The possibility of making some chronological distinction within the Yalā archaeological complex is very important in order to begin a more detailed study of this archaic Sabaean period, that of the first three *mukarribs* of Saba.

However, the significance of our discoveries in the Wādī Yalā concerns not only the possibility of establishing historical/archaeological correlations, but also provides an opportunity to study the ancient Sabaean civilization from a socio-economic point of view. As we have already mentioned, the antiquities of Yalā are distributed over three different physiographic points, which are connected by the same hydrological factor. The water begins to flow in a very charming deep gorge (Ši'b al-'Aql) and here we find, as the inscriptions and the structures indicate, activities related to the ritual-ludic sphere (ritual hunting). Where the water slows down and opens into a wide sedimentary plain (Al-Ğafnah), we find hydraulic devices (dams) and the agricultural means (farms) to perform primary economic activities. Finally, where the water flows freely in its riverbed, the true dwelling centre flourished, and the decision-making activities took place.

The overall picture is not different from that which can be observed today in similar piedmont landscapes, for example in Europe, where plains, piedmont areas and mountains contain cities, electric plants and touristic activities, respectively. Perhaps the comparison is somewhat bold, but it serves to indicate the importance of the archaeological arguments for the study of the Sabaean society and to point out the line of research to be followed for the in-depth analysis of this new archaeological complex.

Alessandro de Maigret

c. Morphology and Sedimentary Deposits in the Yalā Area

During the September '85 exploratory mission particular attention was paid to the

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analysis of morphological and sedimentological evidence in the final stretch of the Danah and its basin slope. Our aim was to reconstruct the paleohydrography, the paleoclimatic conditions and the use to which the land around the city of Yalā was put in ancient times. We distinguished at least three levels of terracing and a stratigraphic sequence in the recent quaternary deposits that can be correlated with similar situations in other parts of the basin (Wādī Tayylah, Wādī Nağid al-Abyaḍ, Wādī Ḥabābiḍ).

The preliminary results of field observations are summarized in a geomorphological photo-explanatory map of the Yalā region, drawn on the original scale of 1:62,500 (fig. 15). It can be deduced from the map that the Wādī Danah once (presumably before 10,000 B.P.) flowed southeast, its waters dispersing over the extensive alluvial valley southwest of Marib bordering on Rub' al-Ḫālī. Subsequently, as a result of considerable tectonic movements, the Danah created an epigenetic valley for itself further north. This valley lies along the course still followed by the Danah today. The Wādī Qawqah and the Wādī Yalā, on the other hand, continued flowing east until, after prolonged neotectonic activity, they too changed their course, cutting through the Sabaean defensive structures (6th-5th century B.C.) before flowing back northeast into the Wādī Danah.

Bruno Marcolongo and Alberto Palmieri

2. *Excavation of the 'Ar-Raqlah' Bronze-Age Site*

Excavation of the protohistorical site of Ar-Raqlah (Al-A'rūš, Ḫawlān aṭ-Ṭiyāl) was carried out from 17-21 August and 14-19 September. The ancient settlement lies north of the Wādī Yanā'im, in the vicinity of the village of Alaṣaf. The structures and surface pottery recall the typologies of the Al-Masannah (*MASI*) and Yanā'im (*WYI*) sites excavated over the last few years, while its relatively large scale (*c.* 90 × 40 m.) places the site among the integrated pluri-modular Bronze-Age settlements. The reasons for conducting research with excavation were, on the one hand, the need to find out why various dwelling units were aggregated at Ar-Raqlah and, on the other, to obtain new stratigraphic and chronological data on this new protohistorical Yemenite culture.

Excavation concentrated on buildings in the second quarter to the west of the site (cf. the map in *EW*, 34, 1-3, 1984, fig. 5), where an entire dwelling 'compound' (fig. 16) was unearthed. A large semi-circular area, enclosed by unsquared stone blocks, contains within the southern part a series of subrectangular rooms with beaten earth floors and central pillars, bounded to the north by a spacious courtyard. Smaller rooms used for storage and manufacture of products were set up against the houses, of which there remain rows of granite blocks that served as bases for the walls. Doors of which only the sills and hinges now remain led from one room to the next and then into the open yard where activities involving the entire dwelling unit were performed. A stone fireplace and large mill-stones for cereals provide evidence of such activities (fig. 17).

In the northern part of the 'compound', which must have been left free to begin with, a series of rooms was subsequently set up against the surrounding wall. In fact, stratigraphic examination reveals two levels in the structure, and the two layers can be clearly made out in a small courtyard to the south where a silos was set on top of an earlier fireplace. C14 analysis of coals found in this fireplace and of fragments of burnt wood from one of the rooms built into the northern yard at a later date gives the dates of 2150 and 1850 B.C. respectively, thus proving that building took place in two phases and showing the minimum length of settlement.

One of the larger structures unearthed in the southwest area is particularly interesting: it is a house that stands out not only because of its size, but also because of the careful way the foundation stones were chosen and set; moreover, there is a stone ledge around

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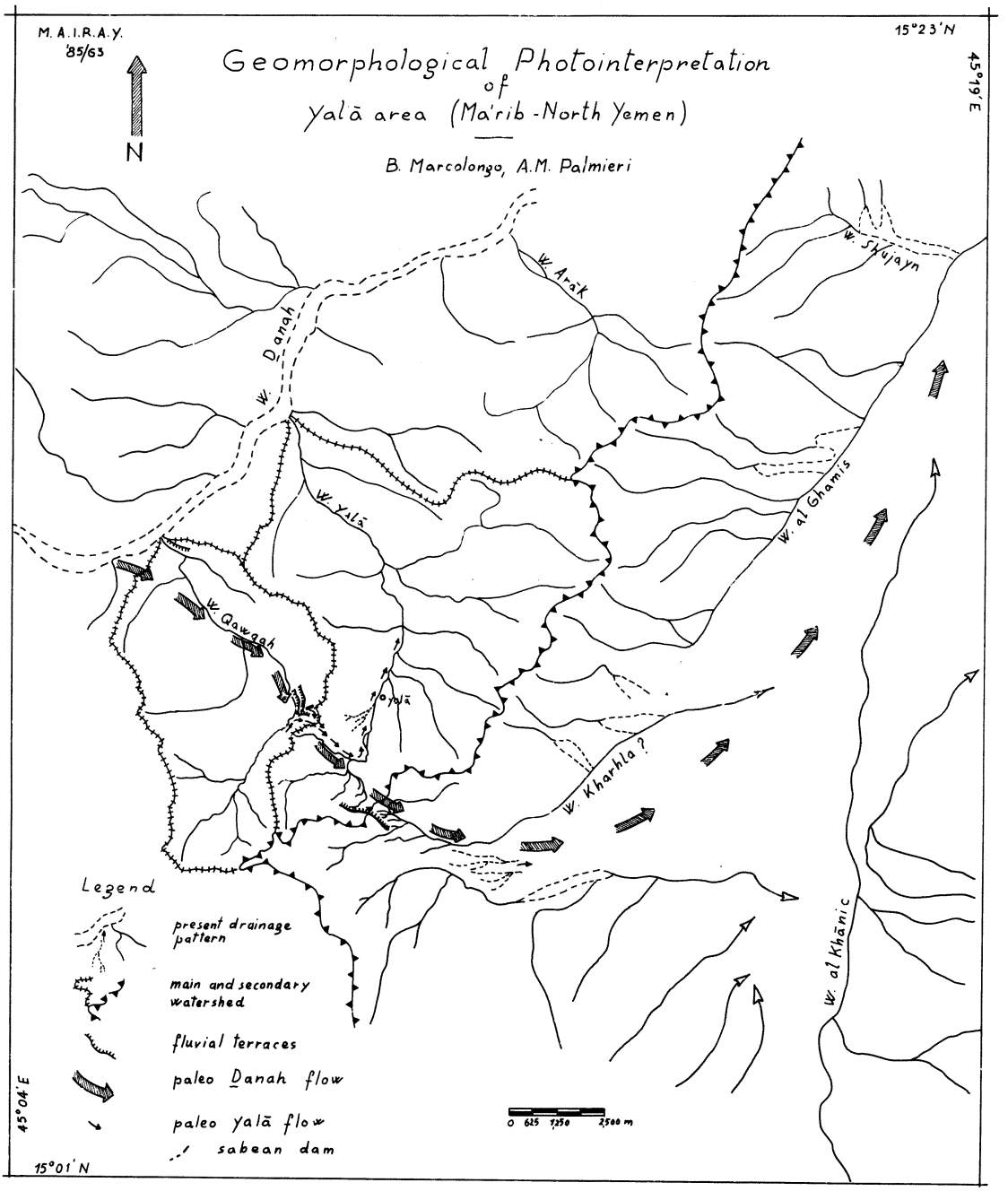

Fig. 15 - Geomorphological map of the Yalā region.

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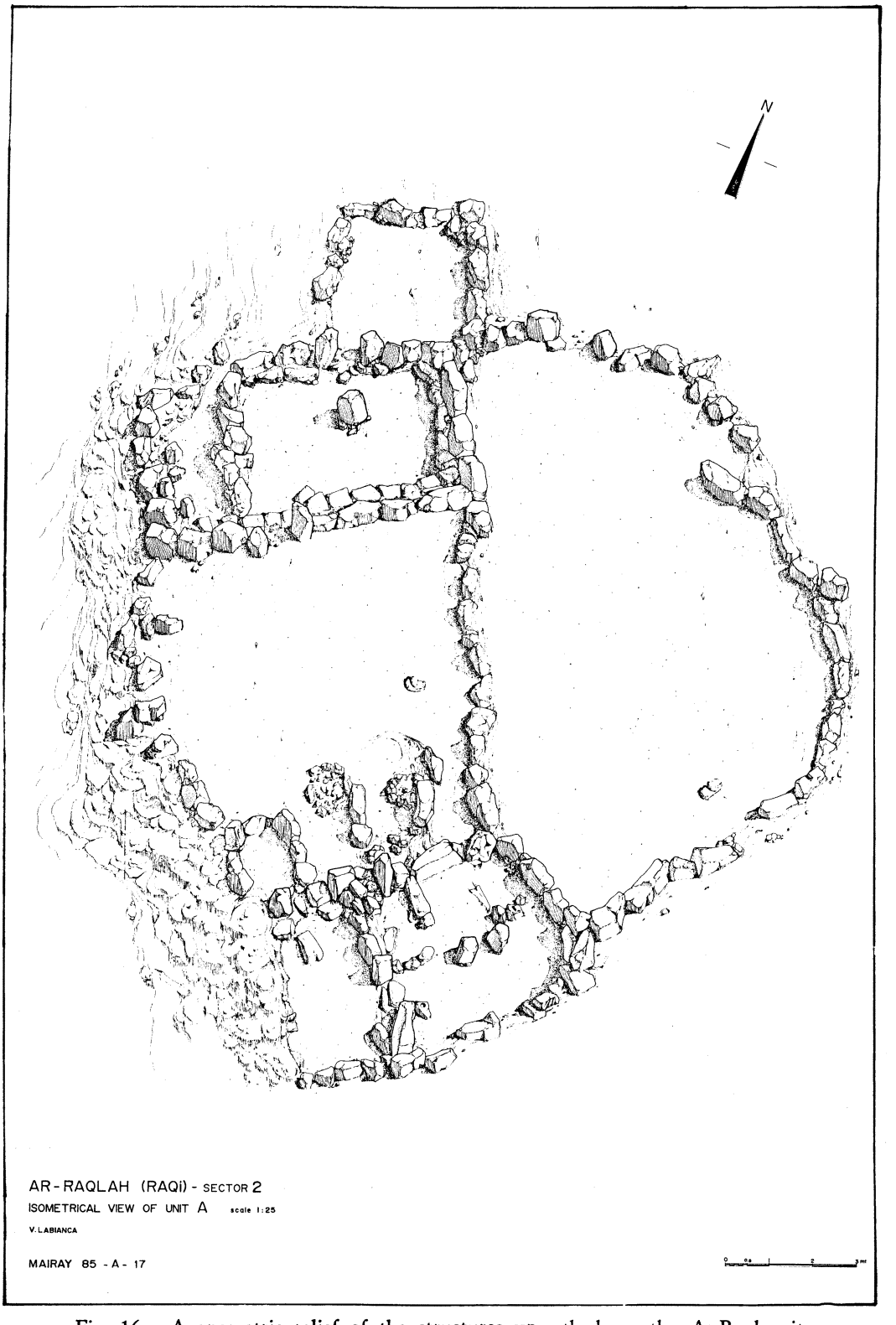

Fig. 16 - Axonometric relief of the structures unearthed on the Ar-Raqla site.

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the entire circumference of the room, an annex dug into the rock to the south, and two doors giving access to both the inner courtyard and to outside the compound (fig. 18). These features set this house apart from any of the others, suggesting that it might have had a public function (assembly hall?). This is probably the first evidence of the community life for which we were looking for signs before the excavation began. The point will be worth demonstrating as it should help us understand the social or economic patterns that led to steady transition from the simple, single-family agricultural type of community to a more complex form, with various activities and social nuclei taking on a more integrated pattern.

Excavation yielded a large quantity of pottery, and the attribution of typologies to two different stratigraphic contexts should give us the chance to see how this new Yemenite vase repertory developed as time went on.

Alessandro de Maigret

3. *Himyarite Antiquities in the Damār Region*

a. The Antiquities at Ḥarābat al-Aḥğur

In late October some farm-workers in the village of Waraqah, 10 Km. east of Damār, discovered a large hypogean tomb of the Himyarite period. The Antiquities Organization called in the Italian Mission which, between 3 and 11 November, set about excavating the tomb and making a partial survey of the area in collaboration with the Yemenite archaeologists.

The tomb belongs to a necropolis dug into the tufa and pumice originating from Ḥayd al-Lisī, situated immediately to the east of a large ruin called Ḥarābat al-Aḥğur. The site, which is oblong in shape (*c.* 70 × 150 m.) and has a north-south orientation, does not appear to be isolated. Other less extensive ruins can in fact be seen on the two nearby plains to the northwest and southeast. The extraordinary amount of squared stones recycled for building in the nearby village of Waraqah (*c.* 1 km. east) attests to the decline and former importance of the ancient Himyarite centre. Study of the three monument inscriptions incorporated in the houses at Waraqah and the rupestrian graffiti, together with perhaps earlier designs of animals and men in the basalt reliefs to the north of the village (Ğabal Ğaḥū al-Ḥarb) and south of Ḥarābat al-Aḥğur (Al-Ḥāğib) may in the future yield more precise historical data on settlement in the area.

b. The Hypogean Tomb of Waraqah

Work consequently concentrated on systematic excavation of the *KAHi* tomb. Access to the underground sepulchre, consisting of a circular chamber of over 5 m. in diameter roofed with a shallow cupola (*c.* 1.5 m. high), is by means of a narrow rectangular pit leading into the tomb at the bottom (fig. 19). Three squared monoliths which have since been removed by the inhabitants of Waraqah once framed the entrance to the chamber. Three false windows were carved into the inner walls of tufa; a long cist, starting from the door, brings the lower level of the hypogeum down by *c.* 70 cm. to a level of -2.8 m. below the level of the ploughed fields.

Most of the articles in the grave-goods (about thirty earthenware vases, bronze and silver jewellery, glass unguentary jars, iron weapons, silver coins and an alabaster statuette of a bull) were scattered over the floor; the pottery was for the most part along the walls and near the entrance (fig. 20). The gradual collapse of tufa from the walls and ceiling, which had become so thin at the topmost part of the vault as to touch the pumice layer above, had completely covered the contents of the tomb and the bodies. Excavations have revealed the presence of at least two adult specimens whose incomplete skeletons have survived. The first to be found lay sideways across the central grave which had been filled with earth, and the other was buried in the cist, the

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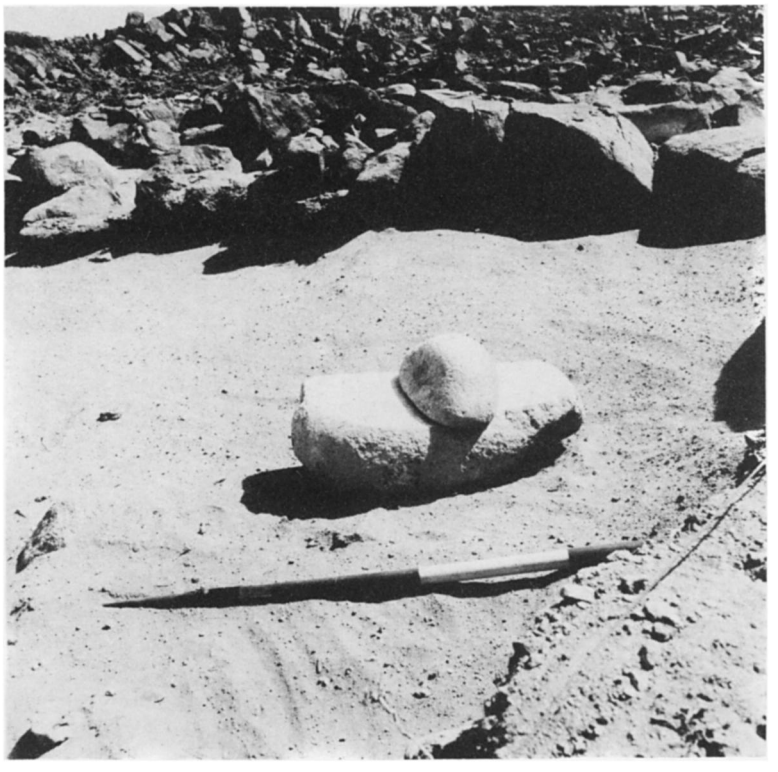

Fig. 17 - Ar-Raqla: millstone for cereals in the L6 courtyard.

Fig. 18 - View of the excavation from northeast; the 'assembly hall' (L12) is in the upper central part.

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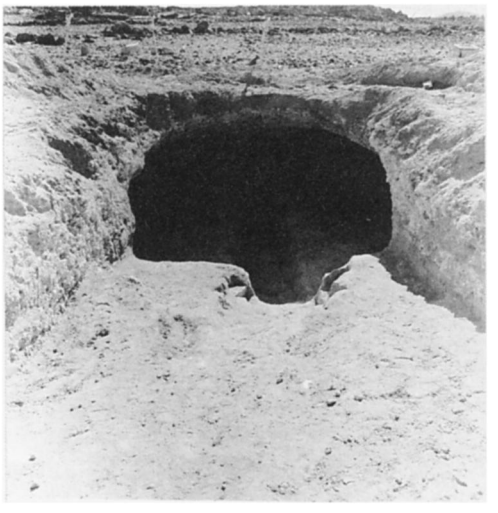

Fig. 19 - Kharabat al-Aḥǧār: the *KAHi, T l* tomb.

Fig. 20 - Kharabat al-Aḥǧār: the *KAHi, T l* tomb, pottery *in situ* on the floor.

crushed skull at the head of the grave opposite the entrance. Apart from a silver bracelet beside it, there was no sign of any other bones belonging to the body. Three or four children were also buried in the tomb, alongside the north and south walls. The disorder in which articles and bones were found suggests that the tomb had been violated in ancient times. The coins bearing the inscription 'Raydān', together with the pottery and glass objects, suggest that the complex dates back to the 1st century A.D. (figs. 21-22).

Recent unauthorized excavations have brought to light more tombs of this type in the surroundings of Ḫarābat al-Aḥǧur. There is urgent need for an exploratory survey of the whole necropolis, and the Italian Mission expects to carry out a complete survey in the coming year with the help of modern geophysical technology, to be followed by a second, more intensive excavation campaign. Moreover, methodical action of this sort is absolutely necessary since reconstruction work performed after the earthquake has brought increasingly numerous reports on chamber-burial finds from the Damār region ('Asām, Šanāẓib, etc.). A few years ago some hypogean tombs were unearthed in a quarry not far from the village of Sarḥah (10 km. west of Yarīm); excavations conducted by R. Wade on behalf of the Antiquities Organization in 1982 revealed structures unparalleled in Yemen. Today, thanks to excavation of this first tomb at Ḫarābat al-Aḥǧur, we know how important funeral rites were in the Himyarite period. There is increasing evidence that they were performed throughout the southern Yemenite plateau, and a new research area must from now on take its place in pre-Islamic south Arabian archaeology.

c. The Wāsṭah and Aḍ-Ḍar 'ah Dams

Following the suggestion of the representative for Antiquities, *qādī* Ḥasān al-Ḥayḍarī, we visited, while in the same area to the east of Damār, an ancient dam not far from the village of Al-Wāsṭah, south of the Damār-Al-Bayḍā' road. Designed to halt the flow of the Wādī Sāmah, the dam is situated *c.* 500 m. north of the village of Al-Wāsṭah. It served to form a narrow but deep reservoir

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Fig. 21 - Limestone bullock from the *KAHi, T l* tomb.

Fig. 22 - Pottery in the *KAHi, T l* tomb at Kharabat al-Ahğār.

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for the irrigation of the fertile valley bottom stretching north as far as the modern village of Sāmah as-Suflah. Of the great squared blocks forming the dam only the southern part remains, set against the western slope of the valley (fig. 23).

The section, *c.* 16 m. thick at the base, tapers towards the top, since the elevation comes down in large steps on the downstream side (fig. 24). There must once have been a lock set in a sort of narrow tunnel crossing the base of the dam transversally. The eastern end of the barrage, which has not survived, must have been set up against a tall spur of rock standing in the middle of the small valley. Traces of a second lock can be seen between this spur and the eastern side of the gorge. A small fortified construction tops the central spur and is likely to have served for keeping watch over the whole hydraulic plant.

We were kindly invited by the *muḥafaẓ* of Ḏamār, Yaḥyah Musliḥ, to visit two more ancient dams situated not far from the village of Aḍ-Ḍar'ah, lying 5 km. south of a small centre, Al-Kawlah, on the Ḏamār-Al-Bayḍā' road. These are twin dams, in that they stand across two parallel *widiān* between which lies the village of Aḍ-Ḍar'ah, and they lead the waters to the fertile plain stretching north. The western dam (As-Sudd) (fig 25) is particularly impressive, although only the eastern half remains; it stands at a height of *c.* 19 m. and measures about 17 m. at the base. It is built of large blocks with plastering on the surface; the upper wall has five 3-m.-high steps, and a cross-section reveals two walls with a hollow space of *c.* 2 m. wide between them. An avant-corps, four-sided in plan (*c.* 4 m. each side) set against the two lowest steps on the outer wall must have housed the locks, as is shown by the three water-intakes, one above the other, opening upstream. Conduction structures can be seen downstream of the dam, separated in accordance with the different levels of water in the reservoir selected by drawing on the intakes at their

Fig. 23 - The Waṣṭah dam.

Fig. 24 - The Waṣṭah dam: section view.

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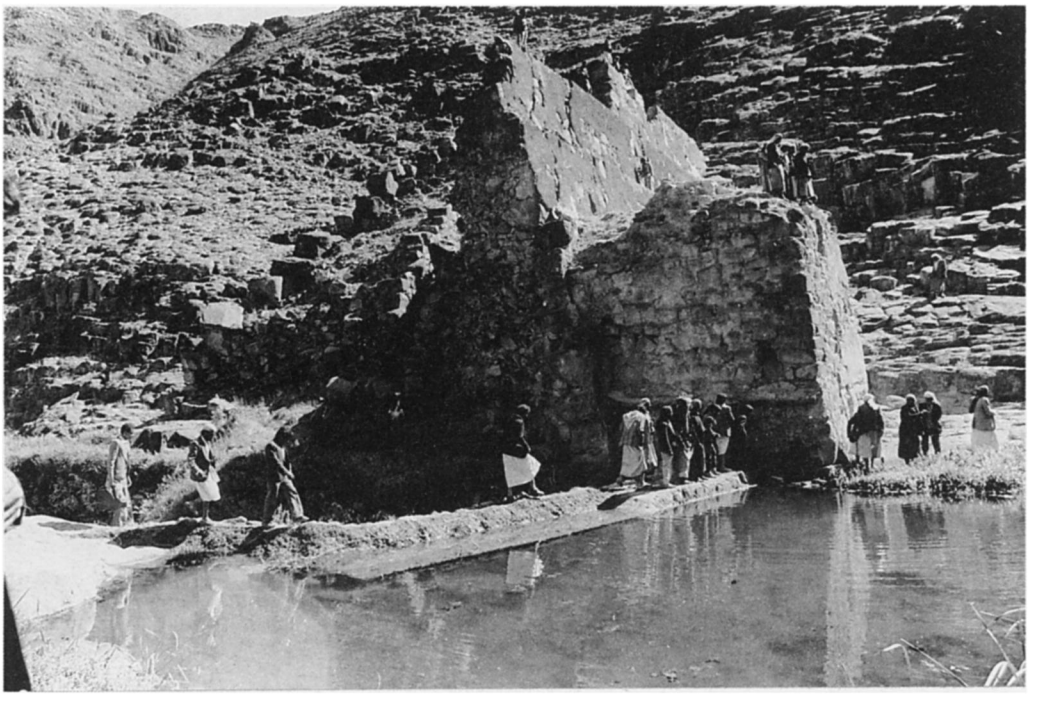

Fig. 25 - The As-Sudd dam at Aḍ-Ḍar'ah.

various heights. We were not able to visit the second, smaller dam on the *wādī* running east of Aḍ-Ḍar'ah.

Alessandro de Maigret

4. *Research on Pleistocene and Palaeolithic sites*

During the research carried out in 1983 and 1984 on the presence of Palaeolithic in the Yemen Arab Republic (north Yemen) several sites with industries typologically related to Middle Palaeolithic have been identified in the Ḥawlān region (Al-Masannah, Ḥammat Ġawl an-Numayrī, Ǧabal al-Ḥumaymah), while a site with Acheulean industry has been found in the Damār plain not far from Ma'bar (Dayq Qā' Ǧahrān).

Although all these discoveries prove interesting, lithic tools have been gathered on the surface, out of their original stratigraphical context. This situation makes their cultural and chronological attribution less easy and certain.

The geological survey carried out in 1984 showed that ancient quaternary deposits had been completely eroded because of the geomorphology of the region in the Ḥawlān area. However, in the Ma'bar region they lie under more recent thick alluvial sediments (loess and silt).

For this reason our research has moved to another geomorphologically different region on the piedmont side of Tiḥāmah, where it was likely that Pleistocene-related formations along the *thalweg* of more important and large *widiān* would be identified.

Thanks to the collaboration of the General Organization for Antiquities and Libraries it has been possible to realize the proposed programme — a survey in the piedmont area of the Tiḥāmah plain from Ḥudaydah to Ḥays.

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Fig. 26 - Wādī Surdūd. Pleistocene-related conglomerate to about 400 m. above sea level. In the central part of the section a flake is visible in situ.

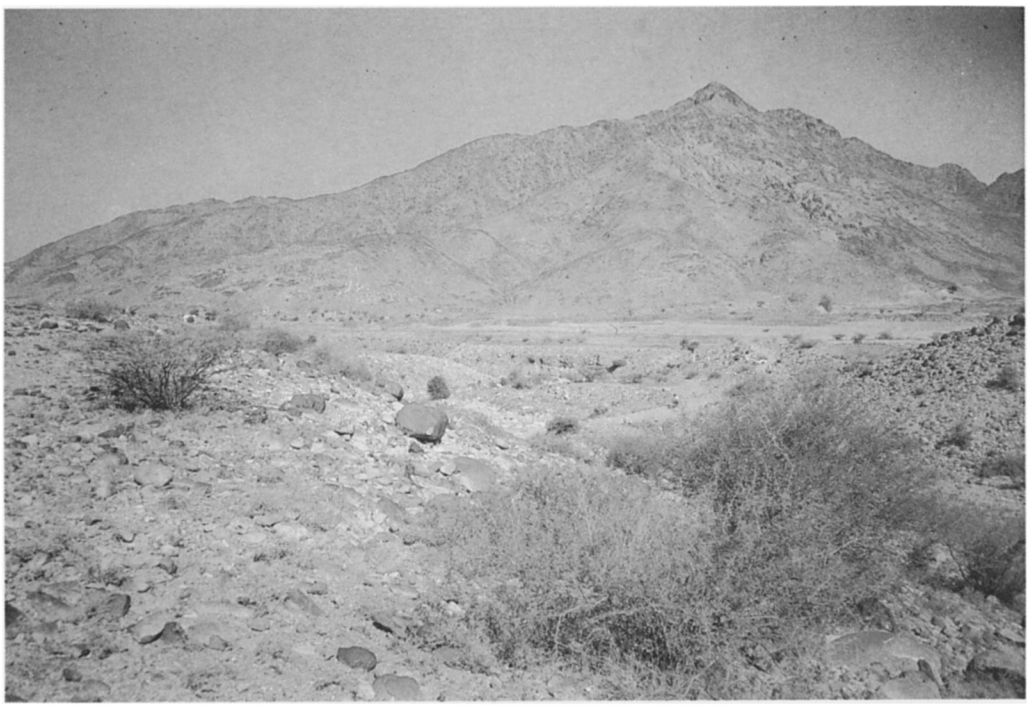

Fig. 27 - Wādī Rimā'. Levels of Quaternary formation to about 400 m. above sea level.

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Going from north to south the *thalweg* of Wādī Surdūd, Wādī Rimā', Wādī Zabīd and Wādī Zurawah were explored from the road cutting across the Tiḥāmah plain to the *ǧabal*.

Deposits related to different phases of Pleistocene are visible in all these *widiān* to neights of between 400 and 150 m. above sea level.

In general they are made up of cobbles and strongly consolidated gravel. They represent the colluvium transported by the same *wādī*, that is present in the middle-height band of the Tiḥāmah.

Often these conglomeratic formations appear in several levels of terraces of various widths, whose sections are visible along many hundreds of metres.

During the survey, several lithic tools were found inside the quaternary deposits, thus in stratigraphical context.

Wādī Surdūd: to about 400 m. above sea level, where Wādī Masdar flows into Wādī Surdūd the Pleistocene-related conglomerate (cobbles and strongly cemented gravel) has been cut by the *wādī* that later transported and deposed more recent sand deposits.

In the upper part of the conglomerate, pebbles and flakes were found to have been used, immediately under the erosion surface (fig. 26).

Wādī Rimā': 500 m. downstream of the dam, under Mišrafah village, the quaternary formation is composed of a succession of levels. In the section four levels are visible (from the bottom): 1) conglomerate; 2) sand and silt; 3) consolidated conglomerate; 4) sand and silt.

A large flake has been gathered in the deposit between the third and the fourth levels (fig. 27).

Wādī Zabīd: to about 300 m. above sea levels in the interior plain terraced quaternary deposits are present, composed of conglomerate (fig. 28).

Fig. 28 - Wādī Zabīd. Conglomerate formation to about 300 m. above sea level.

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A chopper has been found near one of the sand levels in the formation in the visible section of the third and highest terrace.

The survey to the piedmont side of Tiḥāmah enabled us to observe carefully the quaternary formations mapped by the geologist B. Marcolongo.

In addition it was possible to collect abundant geological data and information, that would form the basis for archaeological research on the palaeolithic sites the following year.

Although the palaeolithic tools found are very few, several analogies with the quaternary formations of Northern Afar (F. Barberi et al., 'Geology of Northern Afar (Ethiopia)', *Revue de géographie physique et de géologie dynamique*, 15, 1973, f. 4, pp. 433-90), where lithic industries of Lower and Middle Palaeolithic have been found, allow us to suppose that future research will yield positive results.

Grazia Maria Bulgarelli

5. Tiḥāmah Coastal Archaeology Survey

A brief archaeological survey has been undertaken by the Italian Archaeological Mission in the Yemen Arab Republic in order to evaluate the extent and character of prehistorical coastal settlements in the Tiḥāmah plain and determine an appropriate operational strategy for future research. The importance of the question has been recently highlighted by an intense survey carried out by Y. Zarins in the Saudi Tiḥāmah, as well as by coastal archaeology in other regions of the Arabian Peninsula.

Fieldwork was carried out in a rented Toyota Landcruiser for a six-day period (17-22 October 1985) by a team of three; Professor Maurizio Tosi, Mr Mario Mascellani and Mr Aḥmad M. Šamsān of the Y.A.R. Organization for Antiquities and Libraries, who were accompanied by a driver. The party reached the coast at al-Muḫā by means of the Ṣan'ā' -Ta'iz motorway on 16 October and was comfortably housed in the *Ansaldo Impianti* camp on the northern outskirts of the town.

Coastal uplifting and alluvial sedimentation have combined to cause a rapid build-up of the coast at al-Muḫā and to the south. *Sabḫah* formations extend for an average of 1.5 km. from the actual shoreline, with points of 3 km. in the Ḫawr az-Zayādī. Sites and buildings of the XVII-XVIII century, Muḫā's gold age, have been located 1.5-2 km. to the interior, at the edge of the active *sabḫāh*, suggesting massive deposition.

A mean to seriate chronologically coastal variability is provided by shell-middens, archaeological sites formed predominantly of discharged molluscs, gathered as foodstuff. Apart from informing us about an ecological-cultural pattern, they ensure a source of organic material for radiocarbon dating. The main aim of our short reconnaissance was to place these sites in relation to dominant geomorphic factors: alluvial sedimentation and aggregation; coastal uplifting and sabkha formations; aeolian erosion and sedimentation; and human activities.

On 18 October the party drove north of al-Muḫā, following the coastal track to the oasis belt around Yaḫtul and beyond, to the Wādī Yalūl marking the northern limit of the South Tiḥāmah great alluvial front. All along this route the terminal sections of the thick alluvial deposits have been heavily deflated by dominant southward winds and covered by sand formations. Ground observation of any archaeological features is highly problematical.

In general, oases represent a critical source of soil disturbance for the archaeological record, given the constant upsetting of silt formations on the lower riverine reaches most suited to farming. Higher marine terraces have been disturbed as well as was further evidenced to the north around al-Ḫawḫah, where palm groves have been planted in the fine aeolian beaches while the overlooking terraces are occupied by the villages of today. These higher terraces are limited to 15-20 km. of coast to the north

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of al-Ḥawḫah, and may represent a promising area for early fishing settlements, given their proximity to the active shoreline.

The marine terraces start to rise on the northern outskirts of the town, just beyond the *wādī* to be considered, at al-Ġaššah.

Here, artefacts of stone and ceramic were spread in a disturbed fashion and to some extent can be collected all over the terrace line. A first loose distribution of lithics has been detected at al-Ġaššah in association with different ceramic classes, suggesting a long-range frequentation (*JSH*).

Not much better preserved is the chain of sites recorded to the north along the open terraces between the villages up to al-Qaṭābah: remains of earlier oases overlap the present ones, costantly reduced by soil manuring.

The interruption of coastal roads between Qaṭābah and al-Fazzah compelled the party to proceed on the main Ta'iz -Ḥudaydah road, descending the Wādī Zabīd on 19 October. The Wādī Zabīd represents the largest alluvial plain across the entire Tiḥāmah, allowing lowland cultivation patterns of a multitude of crops.

Silt deposits extend well beyond the present-day cultivations, along the coastal floor between al-Mutaynah to the south and aš-Šafiyah to the north for a total of 16 km. These earlier silt formations, lying outside the present irrigation capacity, have been left exposed to massive wind erosion that has deeply ploughed the small plain along the deltaic front, forming the typical *yardang* landscape. A number of large Islamic settlements and cemeteries have been visited in the al-Fazzah area (*MTYi, ii, iii*).

Best known is the 3-km. long *MTY*, of the Rasulid age, to be excavated shortly by the Canadian Expedition of the Royal Ontario Museum. A thick deflation pavement of pottery and other artefacts is witness to the massive erosion, apart from the *yardang* morphology of the reduced cultivated silt behind it (fig. 29). The present shoreline runs 2-3 km. from the Rasulid sites, exhibiting less of a build-up than in the al-Muḫā region. Most interesting for a reconstruction of the coastal morphology is the presence of post-Rasulid and subrecent sites between *MTYi* and the present shoreline, such as *MTYiii* with XVII-XIX century European glass and the *MTYiv* cemetery. For this purpose a radiocarbon shell sample was collected at *MTYi*.

On 20 October the survey party moved to the northern section of the Wādī Zabīd deltaic fan, centred in the town of al-Muğaylis. While still on the central section of the river, 800 m. to the north of the palm groves of al-Midāmman, a sherd scatter of 1-1.5 ha. was noticed. The deflation pavement of the sherds is thick, but very low in profile, illustrating the intensity of erosion in the last 200 years. The sampled ceramics at *MDM-N* are representative of a very recent occupation, including European glass sherds.

Residual sandy-silt terraces, strongly reduced by wind deflation, can still be detected along the beach rear line, emerging from the predominant sand dune morphology, whenever an opening occurs. The car was driven at low tide some 3 km. south of aš-Šafiyah. Here on the deflation floor of a small terrace scattered specimens of *Terebralia palustris* L. shells were collected (*SHF*). This mollusc lives all around the Indo-Pacific region, in symbiotic relation with mangroves and populates the mudflats among and around the tidal creeks in great numbers. Such concentrations of *Terebralia* shells bear witness to an extinct mangrove environment; thus, for a reconstruction of coastal palaeoenvironments they are of great significance.

At *SHF* as well a notched sandstone pebble was recovered, probably an ancient net-sinker, further emphasizing the prospect of an early dating of the mangrove intertidal environment. The coast is at present a straight sand beach, with no remnants of tidal creeks that might provide a suitable environment for mangroves.

Moving northwards from al-Muğaylis a

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track led us across the dune-fields separating Wādī Zabīd from the lower reaches of Wādī Rimā'. A 30-m. high dune front separates the last 8 km. from the seashore. Partly covered behind the dune, and cut across by the track, there is a 4-5 ha. site with a strongly deflated surface, allegedly of pre-Islamic date (*ABD*). The site produced a few Rasulid glazed potsherds as well as some obsidian flakes. The great majority of the material littering the surface is made of a dark brown pottery, with predominantly open shapes, retaining traces of a thin glaze. Animal bones are abundant, while marine shells are comparably few. *Terebralia* are the predominant species, although a strong reduction by fragmentation migh affect their incidence. No radiocarbon samples could be collected.

The Wādī Rimā' is not cultivated for the last 14 km. of its course. Driving along its still intact northern bank, we finally sighted the first shell-midden, right overlooking the edge of the terrace, to the east of a hamlet called aš-Šumah, 30 m. a.s.l. (*SHM*) (fig. 30). This compact mound of *Terebralia p.* has a round plan, some 50 m. in diameter, sloping gently to the north to edge the E-W track to al-Madaniyah. The average thickness of the deposit is estimated around 50 cm. Associated lithics support a prehistoric date as does the actual distance of the site from the seashore: 10 km.! A mangrove tidal creek could hardly have entered the riverine bed for more than 2-3 km.

The site of *SHM* has therefore provided a first parameter to direct future research in the appropriate areas. The associated lithic industry includes basalt flakes and only a few jasper ones; no tools were recovered in our hasty reconnaissance. A fair amount of pottery is spread across the site, suggesting a later date (2nd-1st millennium B.C.) or the superimposition of two distinctive phases of occupation. Finds also include direct evidence of food production, in the form of domesticated animal bones and fragmentary quernstones (fig. 31).

A 2-m.^{2} surface on the top of the mound was scraped to analyse the composition of the deflation pavement. Later in Ṣan'ā' it was sifted at 1 mm. mesh. The final dry weight of 3560 g. was composed of 93.67% of fragmented *Terebralia p.* shells (Table 1).

For the last three days of field-work hospitality was offered to the *Ansaldo Impianti* camp at the Rā's Katanīb power-plant.

After the discovery of the inland shell-midden at aš-Šumah a decision was made to search for a similar configuration along another watercourse, to the immediate south of Ḥudaydah, which would also allow close examination of the marine terrace around the airport. In this area two main *widiān* are in close proximity with each other and we expected an interesting intersection of early lacustrine-riverine systems that might allow for a fair preservation of the prehistoric evidence, 5 to 10 km. inland. The 20-m. high terraces bordering the airport to the west were of course excluded for security reasons and we had to proceed directly to the mouth of Wādī Rummām, 22 km. south of Ḥudaydah (otherwise named on the maps as Wādī Ğaḥabah). The large oasis of ad-Durayhimī expands all over the silty plain, preventing a large surface from being observed, except for the recent dips within the palm groves, very similar to the site in al-Muğaylis. From ad-Durayhimī we drove NNW to transect the deserted area separating it from Wādī Sihām, 7-8 km. to the north.

A second prehistoric shell-midden was located on a small side branch of this system and named Ğaḥabah (*JHB*). The site is made of a compact accumulation of *Terebralia p.*, extending 150 m. north-south and articulated in two low elevations, some 80 cm. above the river bed. The slope is very gentle and lithic artefacts are scattered all over it. Basalt is again the predominant material, although the inventory also includes four obsidian flakes. Only small potsherds of a strongly abraded dark brown pottery were recovered, with no evidence of any later material. A few quernstone fragments and

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Fig. 29 - Aeolian erosion at al-Fazzah, along the Wādī Zabīd seafront: *yardang* formations north of al-Mutaynah in approx N-S orientation.

Fig. 30 - Site aš-Šumah (SHM) shell midden on Wādī Rimā' northern bank, seen from SW.

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Fig. 31 - Close-up view of deflation pavement at aš-Šumah (SHM).

Fig. 32 - Site Wādī Ġirb (JRB) seen from roadside (SE) during random sampling of midden deposit encroached by aeolian accumulation.

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the recurrence of animal bones suggest a developed stage of subsistence economy here as well.

JHB lies 5 km. from the present seashore, confirming that coastal reconnaissance in the Tiḥāmah will have to investigate deep into the interior according to a strongly metamorphosized drainage pattern in the deltaic reaches of the system.

Continuing north for little more than a kilometre we reached the northern embankment of the Wādī 'Uqr, greatly lowered by severe wind erosion. Lying along the terrace we came across a very large early historical site, 25-30 ha. in extension and some 2.5 km. in circuit according to the car's odometer. The area is significantly known as al-Qasabah/Ḫarābah: 'the ruins'. No structures are evident any longer and the site is one continuous deflation pavement made of undecorated dark brown sherds, gently sloping southward to line the earlier *wādī* bed. Both animal bones and molluscs are very frequent. Enough *Terebralia p.* could be collected for a radiocarbon sample. No lithic industry and almost no glazed pottery were noted. The only significant small find is a fragment of an alabaster bangle with a planoconvex section.

The coastal region to the north of Ḥudaydah still retains some of the environmental aspects that might have characterized the multispectral resource exploitation of late prehistoric times.

This is particularly evident around the Aṣ-Ṣalīf peninsula, surveyed in the last day of our reconnaissance, on 22 October. Remnants of mangrove swamps are still located at Maḥall al-Qayyaim, sustaining a large lacustrine population of birds and crustaceans.

One of the most peculiar features in the Tiḥāmah around Aṣ-Ṣalīf is the tidal meadows on the less brackish *sabḫah* mudflats. The thick grass cover feeds a sizeable cattle population. The proximity of the coral reef allows for sustained fishing activity all year round and fish is mostly exported to the market towns of Yemen and Saudi Arabia.

The main watercourse in this part of the Tiḥāmah is the Wādī Surdūd. Along its lowermost section a minor system called Wādī Ǧirb runs parallel which might have represented a drainage section in earlier times. Following the scheme suggested by the distribution of shell-middens in Wādī Rimā' and Wādī Sihām, we explored the lower sections of both river-beds. A first site was located along a marine terrace at the outlet of Wādī Ǧirb (*JRBi*). The site can be divided into a northern and a southern section; the first is characterized by a finely fragmented shell floor mixed with abundant lithics of basalts and rhyolites, white the second is characterized by a looser distribution of shells and potsherds and might represent a later occupation. Mammal bones are present in both sections of the site, concentrated in one case in a 2-m.^{2} area.

Along the northern bank of Wādī Ǧirb a second prehistoric site has been sighted at *c.* 8 km. from the seashore (*JRBii*). The archaeological complex is related to an early lacustrine environment residually represented by a large *takyr* silt flat now lying some 200 m. SSE. On preliminary evidence this small depression might be the point of origin of the Wādī Ǧirb. *JRBii* is a flat midden, 70 × 25 m., covered by a thick deflation pavement (fig. 32). The analysis of a scraped surface sample has given the weight division of topsoils, 42.36% is represented only by *Terebralia p.* shells, while artefacts are evenly split (34.58%) between potsherds and lithics (Table 1). All known lithotypes are present for the first time, including flint (2), jasper (41), basalts (236), rhyolites (35), chalcedony (3) and obsidian (10) pointing to a more widespread or efficient supply system plain wares of a reddish brown colour are predominant. The most interesting find is two sherds of steatite/chlorite vessels, one representing a rim fragment of a small globular bowl, with a 9-10 cm. mouth diameter (fig. 33), a type known from inventories of eastern

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Arabia and the Oman peninsula of the 2nd millennium B.C.

JRBii might represent a close relative of the 2nd millennium B.C. sites recently discovered by Y. Zarins at Sihi, about 150 km. to the north in the Saudi Tiḥāmah, although it is still too early to put forward any connection before more concrete ceramic parallels can be evaluated. The difference in terms of material affluence from the other shell-middens at Ǧaḥabah and aš-Šumah is anyway striking, ensuring the terms of future classification once the data bases are expanded.

The recurrent presence of thick *Terebralia palustris* concentrations all over the coastal region between Aṣ-Ṣalīf and the Wādī Zabīd has made the shell the true protagonist of this embryonic research, suggesting that in prehistoric times and as late as the early centuries of Islam the Tiḥāmah was a completely different world. Large mangrove thickets colonized the intertidal flatlands, deeply penetrating with broad *aḫwār* and allowing a much richer biomass for the benefit of human exploitation. It is still too soon to draw any other conclusions, but the availability of this abundant archaeological material leads us to believe that the Tiḥāmah has great potential for future research on Quaternary geology and the related study of early coastal cultures that might have intermediated between the Yemeni highlands and the Horn of Africa.

Maurizio Tosi

6. *Research on Neolithic and Holocene paleoecology in the Yemeni highlands*

1. Excavation

Neolithic and Holocene research, in 1985, concentrated on excavation and collection

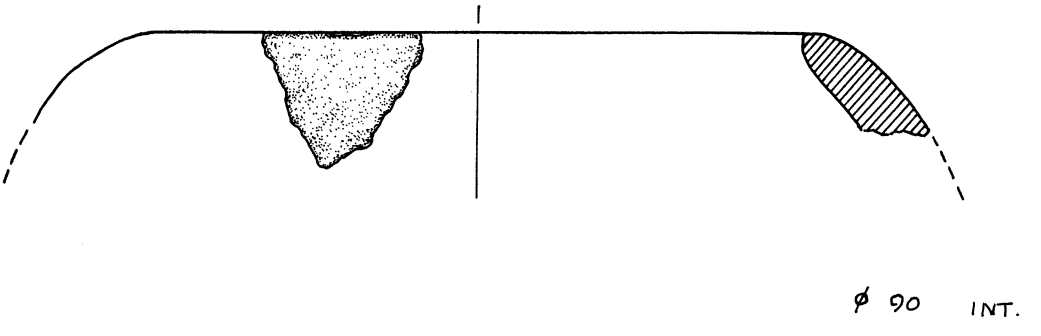

Fig. 33 - Wādī Ǧirb (JRB), chlorite vessel rimsherd (drawing by P. Smith).

analysis rather than on exploration. The site *WTHiii*, near middle Wādī aṯ-Ṯayylah in the Ḫawlān, was again selected for excavation and paleoenvironmental studies (October 1985). The cooperation of Dr Francesco Di Mario in the Neolithic part of the project is gratefully acknowledged.

WTHiii is an open-air site of about 0.3 hectares (= 0.74 acres), marked by a dozen stone structures interspersed with important scatters of lithic artefacts. An area of about 70 m.^{2} has now been opened by excavation. Both horizontal and vertical controls were employed and, possibly for the first time in the Yemen Arab Republic (north Yemen), detailed attention was paid to microstratigraphy and the environmental significance of sediments and cultural layers.

An E-W transect-trench 22 m. long and two stone structures (F25, F37) were ex-

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Fig. 34 - Wādī aṭ-Ṭayylah, site *WTHiii*. Elliptical hut F 25 and associated structures, as seen from the SE. Neolithic.

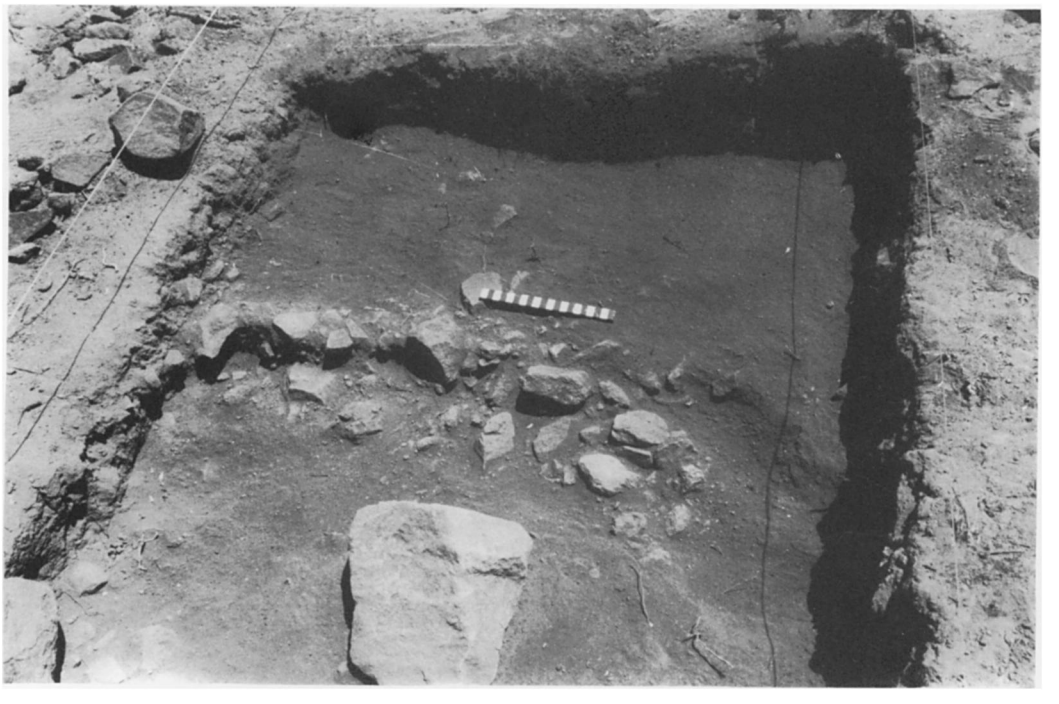

Fig. 35 - Wādī aṭ-Ṭayylah, site *WTHiii*. Base socket of a wall of stakes and branches, appended to structure F 25. Neolithic.

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cavated in the upslope area of the site. Study of building F25 provided a glimpse of one of the elliptical 'huts' which are attributed to the Neolithic. F25 turned out to be a rather complex habitation structure. A flimsy structure of stakes and branches (a shed?) was appended to the main oval body, while on the opposite side additional stone-

Fig. 36 - Wādī aṯ-Ṯayylah, site *WTHiii*. East-west trench across the upper area of the site, exposing the neolithic surface (in the background) and the underlying levels (test-pit in the foreground).

based rooms seem to have existed. A number of features, including angular-stone floors and ashy patches, were found inside the building (figs. 34-35).

It is now clear that most or all of the half-buried stone structures at *WTHiii* are associated with the surface of a slightly organic, grey 'paleosol', indicating slope stability and some vegetation cover. Building F37, apparently dating from the Early Islamic Bānī 'Aṣāl period, is linked to modern-type, sandy-silty slope deposits.

Two new test pits confirmed the existence of still older traces of human presence, buried in previous sediments to a depth of about 1 m. There are possibly two superimposed 'Neolithic' layers, preceded by an earlier episode of human activity ('Mesolithic'?). Some animal bones were recovered with the older Neolithic material; they represent, to our knowledge, the earliest animal sample so far found in north Yemen. These weathered and extremely crushed bones were subjected to painstaking laboratory treatment. They comprise mandible, radius and phalanx fragments belonging to medium-sized bovids, which may well be the Near Eastern variety of wild ox or *Bos primigenius*. It is worth noting that the context of these finds, from the deep levels of *WTHiii*, points to episodes of butchering, burning (near rough stone features?), and intensive stone-flaking (figs. 36-37).

2. Analysis and Interpretation

A major effort was made to understand the many artefact collections. Particular attention was given to the excavated material, for both its quantity and context information. New analytical approaches are being tested. The following historical interpretation seems to be emerging.

'Neolithic' refers to a life-style based on incipient domestication of nature (cultivation and/or stock-raising). The Neolithic in north Yemen is still rather obscure. It falls between the end of the hunting-gathering traditions, almost unknown in the region, and the appearance of a village, pottery-using culture about 2000 B.C., (A. de Maigret's Bronze Age). Our field-work, supplemented by comparisons with the rest of the Arabian Peninsula has resulted in a

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Fig. 37 - Wādī aṯ-Ṯayylah, site *WTHiii*. Test-pit as in fig. 50, northen section, showing the 'Ṯayylah' sequence of Holocene deposits.

preliminary definition of two Neolithic aspects in north Yemen, possibly applicable to the Yemen and Aṣīr uplands as a whole: one (Quṭrān or Al-Ḥadā') linked to the so-called Arabian Bifacial Tradition of central Arabia and the desert; the other (Ṯayylah or Ḥamlān) probably specific to the mountainous zone. It is suggested that the latter be viewed as part of an 'Upland Neolithic Tradition'. It may be dated to 6000-3000 B.C. according to climatic correlations based on sediments.

The hypothesis that the Quṭrān aspect antedates the onset of this tradition at *WTHiii* needs further testing. The chipped-stone component of the Upland Tradition may be at the origin of the Bronze Age lithic industry. The latter has been investigated by F. Di Mario.

3. Faunal studies

The programme of faunal analysis for paleoecology and paleoeconomy has been pursued. A paper on the main Bronze Age collection was published (F.G. Fedele, 'Fauna of Wādī Yanā'im (*WYi*), Yemen Arab Republic', *EW*, n.s., 34, 1-3, 1984, 9 pp.) and work was completed on the collections from Ar-Raqlah *RAQi* (Bronze Age, 1985 excavation) and *WTHiii* (see above). The finds from Ar-Raqlah mostly represent household refuse in which ovicaprids predominate; both sheep and goats can be demonstrated. Cattle is quite subordinate. An upper jaw of a small carnivore, possibly a mongoose, is also present.

4. Rock Art

The start of a systematic search for Neolithic rock art has been hampered by

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other demands on our time. A survey conducted in the Ğabal as-Sama' area, 30 km. to the NNE of Ṣan'ā', resulted in the discovery of a richly engraved and inscribed area, in a *wādī* bed cutting the lava plain north of the *ğabal*. The oldest engraving is probably that of a Sabaean personal name.

5. Public activities

With the assistance of F. Di Mario, the author cooperated in the preparation and staging of an exhibition on the work of the Italian Mission, at the Ṣan'ā' Sheraton Hotel, under the auspices of the Italian Embassy (October 1985). Displays with photographs, drawings and finds, on the Neolithic and zooarchaeological studies, were prepared.

Francesco G. Fedele

7. *In Search of the Ancient Arabian Obsidian Sources*

During the previous visits of the Italian Archaeological Mission to Yemen it had already struck us quite forcefully that obsidian occupied a significant place in the lithic work of local neolithic production. We had also observed that distribution of obsidian utensils was fairly even, with no particular local concentration. Our first working hypothesis was that the obsidian used in neolithic Yemen came exclusively from the two main volcanoes that produced obsidian flows: Ğabal Isbīl and Ğabal al-Lisī, both in the volcanic area of Dāmar. Sampling for Ğabal al-Lisī was completed during the 1984 campaign, while sampling for Ğabal Isbīl continued in 1985. As has already been pointed out elsewhere, Ğabal Isbīl is a large stratovolcano showing very considerable caldera collapse, the acid (obsidian) flows of which merge with the more basic (non-obsidian) flows.

XRF analysis was continued on the geological samples collected during the 1985 campaign, as well as on obsidian samples from archaeological excavation.

Laboratory examination confirms what analysis of the first samples had suggested, i.e. that Ğabal Isbīl and Ğabal al-Lisī were not the only sources of obsidian for ancient Yemen. In fact, in view of these initial results we decided to go on to explore other volcanic areas and, in particular, the Ṣirwāḥ area. On-the-spot examination gave negative results, even though a great many obsidian utensils were found on the surface at the Ṣirwāḥ site itself. These utensils showed very close compositional affinity (comendite) with the obsidian flows of Ğabal Isbīl and Ğabal al-Lisī, although in other respects they differ greatly.

Statistical compositional analysis carried out on 116 archaeological obsidian samples revealed four different groupings, but only 20 samples form the sites of Ğabal Quṭrān, Wādī Yanā'im and Naǧid al-Abyaḍ can safely be stated to have been made with Ğabal Isbīl obsidian.

Vincenzo Francaviglia

8. *Paleobotanical Analysis of the Pottery Collected*

A great many of the sherds collected by the Italian Archaeological Mission were subjected to paleobotanical analysis aiming at the recovery, study and identification of impressions and carbonized and silicified fragments contained within the sherds.

Material from several sites, including *WYi*, *MASi* and *WUiv*, had been examined during the previous excavation campaigns (L. Costantini, 'Plant Impressions in Bronze Age Pottery from Yemen Arab Republic', *EW*, 34, 1-3, 1984, pp. 107-15), but re-examination of sherds that had shown no significant impressions on the first analysis gave an opportunity to exploit the last three years' experience, revealing further cereal impressions to be added to those already studied.

Altogether we examined about 8500 sherds coming from 78 different archaeological locations which for various reasons (survey and/or excavation) had been explored by the I.A.M. Of the 78 locations, only 18 yielded sherds bearing identifiable impressions, mainly of cereals. From these sites

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we singled out a total of 65 sherds amounting to 0.76% of all those examined, and identified among them 128 impressions, 4 carbonized remains and 22 silicified residues of glumes. From the chronological point of view, the 18 sites examined can be divided into two groups, the larger group consisting of 15 sites that can be attributed to the Bronze Age, and the smaller group of only three sites dating back to the Sabaean period (for chronology see A. de Maigret, 'A Bronze Age for Southern Arabia', *EW*, 34, 1-3, 1984, pp. 75-106).

The various species identified in the sites belonging to the protohistorical and Sabaean periods are listed in Table 1.

In the case of the protohistorical sherds, the occurrence of seed impressions in the material itself seems quite accidental as no significant amount of straw but only isolated cereal caryopsides were found. Just one shard, from *WYi*, showed enough wheat and barley straw (rachis segments, glumes, etc.) to suggest they had been deliberately mixed in.

Although the quantity of impressions of various species found in the protohistorical sites involves too many factors imluencing their distribution and preservation for exact assessment, there seems to be a certain prevalence of barley over wheat. It is also worth noting that wheat is to be found in the *WYa*, *MASi*, *WUiv*, *RAQi* and *NABvii* sites, where geopedological survey has revealed remains of paleosols connected with agricultural activities. Moreover, site *WYi* bears evidence of *Sorghum* and *Panicum*, suggesting that there may well have been double harvest season, and this tallies with the survey of the Hili 8 sites (S. Cleuziou, L. Costantini, 'Premiers éléments sur l'agriculture protohistorique de l'Arabie Orientale', *Paléorient*, 6, 1980, pp. 245-51; S. Cleuziou, L. Costantini, 'A l'origine des oasis', *La Recherche*, 13, 137, 1982, pp. 1180-82) in the Oman peninsula, and the Pirak site (L. Costantini, 'Palaeoethnobotany at Pirak: A Contribution to the 2nd Millennium B.C. Agriculture of the Sibi-Kacchi Plain, Pakistan', in M. Taddei, ed., *South Asian Archaeology 1979*, Naples 1981, pp. 271-77), in Pakistan.

In the three sites of the Sabaean period straw proves to be an essential structural component of the mixture, giving it particular lightness. Any irregularities resulting from hollows produced by small fragments of straw were easily eliminated by the slip which afforded the opportunity to smoothen and waterproof the surfaces. The sherds examined showed no signs of rough finish, suggesting that the straw was chopped fine before being mixed in with the clay. Analysis of impressions and silicified remains revealed the presence of *Hordeum*, *Triticum*, *Panicum*, *Echinochloa*, *Paspalum* and *Linum*, and this tallies perfectly with the evidence found in the pre-Islamic site of Haǧar Bin Ḥumayd, in the Wādī Bayḥān, Democratic Yemen (T.R. Sonderstrom, 'Impressions of cereals and other plants of Hajar Bin Humeid', in G.W. Van Beek, ed., *Hajar Bin Humeid. Investigations at a Pre-Islamic Site in South Arabia*, Baltimore 1969, pp. 399-407).

Lorenzo Costantini

Table 1 - *Compositional variability of deflation surface cover on shell-middens*

Type of material	Aš-Šumah East		*JRBii*	
	g.	%	g.	%
Terebralia p.	3335	93.67	1470	42.36
Other shells	15	00.42	25	00.72
Ceramics	20	00.56	600	17.29
Animal bones	20	00.56	125	3.60
Lithic industry	120	03.37	600	17.29
Gravel stones	50	01.40	650	18.73
TOTAL	3560	100.00	3470	100.00

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Islamic Period

In 1985 the Italian Archaelogical Mission in North Yemen was once again engaged in the research programme on the Islamic period, begun in 1984. The team composed of Professors Umberto Scerrato, Giovanna Ventrone Vassallo and Paolo Cuneo, Mr Michael Jung and Mr Mario Mascellani spent November visiting 32 sites and 92 monuments, above all religious buildings, and conducting surveys on 70 of them. In the case of the Masǧid al-Qubba al-Qadīma at Ḥadda, the Great Mosque of ar-Rawḍa, the complex at 'Umm Layla and the Great Mosque at Ḥays, the monuments were also topographically surveyed.

One of the main concerns of the 1985 campaign was the continuation of studies on the typology of religious architecture in North Yemen, with the aim of reaching at least a preliminary definition of the various types of religious buildings identified throughout the different provinces of the country. To this purpose inquiry was extended to a number of regions that had not as yet been visited: the region of Ṣa'da and part of Ḥaǧǧa, some places in the regions of Mā'rib, Damār and 'Ibb, and various sites in the region of al-Ḥudayda, especially in the centre and south (see attached list).

Our study was limited mainly to the observation and survey of architectural structures, because we had only few and, at times, uncertain data at our disposal, and no opportunity as yet to put research on a sound archaeological basis.

The data we collected in the 1984 and 1985 campaigns, together with the published reports of previous surveys, allowed a preliminary typological classification of the mosques in North Yemen to be made. A report was delivered at the recent 'Seminar for Arabian Studies' (London, July 1986), entitled: 'Studies for a typology of Islamic architecture in North Yemen'.

To begin with, the typology was roughly divided into two broad categories: the first (I) including buildings where the combination of the prayer-hall with the arcaded court (*Saḥn*) forms part of an organic architectural project; the second (II) including buildings where the court is not integrated with the prayer-hall or does not belong to the same architectural scheme, but is simply a space for circulation, chiefly for ritual ablutions, at times connected with covered areas serving as oratories, accommodation for pilgrims, madrasa, etc.

I - *Mosques with Organic Courts* (Table 2)

IA - Flat-roofed mosques

IA 1 - with aisles parallel to the *qibli* wall

a) with longitudinal court (e.g. al-Ǧanad; ar-Rawḍa, al-Ǧāmi' al-Kabīr: fig. 38);

b) with latitudinal court (e.g. Ṣa'da,

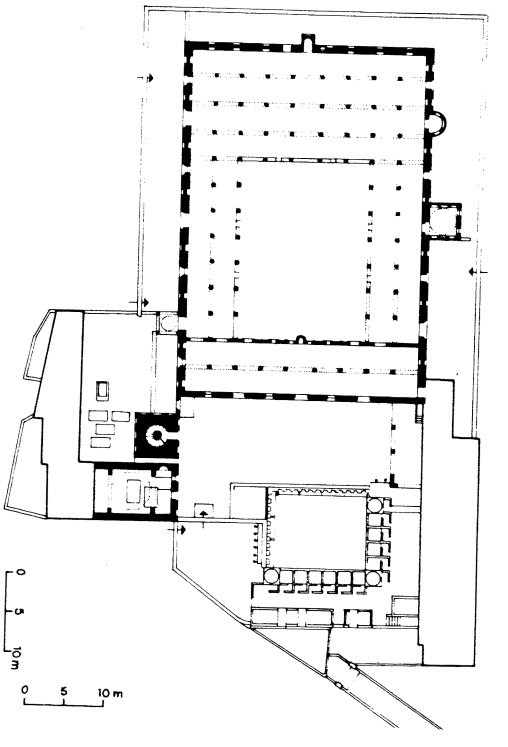

Fig. 38 - ar-Rawḍa: al-Ǧāmi' al-Kabīr, the plan. (N. Olivieri 1985).

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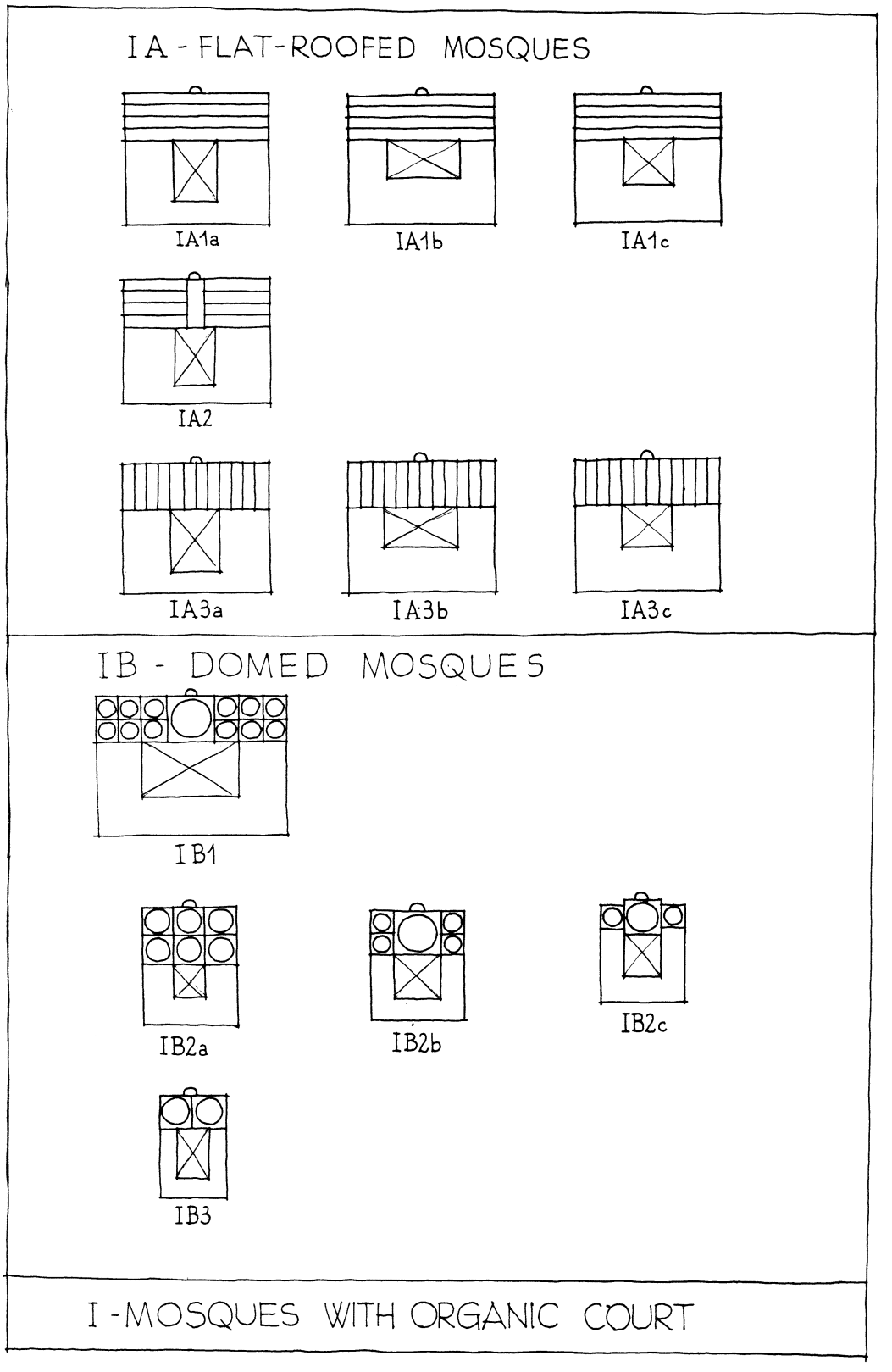
Table 2



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Ğ. al-Hādī: figs. 39-41; Zabīd, al-Ğāmi' al-Kabīr; Šahāra, Ğ. al-Imām al-Qāsim; Ḥūṯ, M. aṣ-Ṣaumi'a);

c) with square court (e.g. Šibām Kawkabān, al-Ğāmi' al-Kabīr);

IA 2 - with transept (e.g. Ğibla, al-Ğāmi' al-Kabīr);

hypothesis on derivation from pre-Islamic south Arabian models because the quality of the comparable elements is still too general. Indeed, the building of Ṣirwaḥ Arḥab, which is always mentioned in this connection and which is known of through the Glaser drawing, should not be a temple

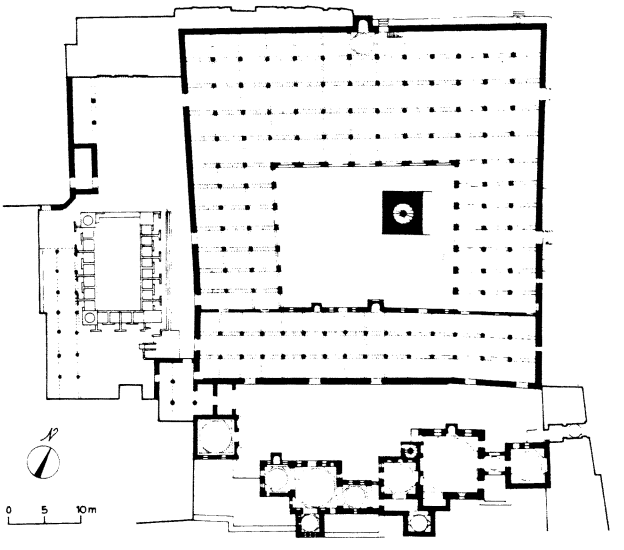

Fig. 39 - Ṣa'da: Ğāmi' al-Hādī, the plan. (N. Olivieri 1985).

IA 3 - with aisles perpendicular to the *qiblī* wall

a) with longitudinal court (e.g. Dū Ašraq, al-Ğāmi' al-Kabīr);

b) with latitudinal court (e.g. Ẓafār Dī Bīn);

c) with square court (e.g. al-'Uqda, al-Ğāmi').

Almost all the Type IA mosques are *Ğāmi'* and are predominant on the plateau, though they are also to be found in the Tihāma (e.g. Zabīd).

Regarding the origin of the type IA, it has not as yet been possible to advance any

adapted for the use of the mosque, but a mosque built with a spolia of more ancient pre-Islamic buildings, according to the opinion expressed by J. Schmidt (*Archäologische Berichte aus dem Yemen*, I, 1982, p. 169).

IB - Domed mosques (Table 2) (sometimes preceded by flat-roofed bays)

IB 1 - with the prayer-hall divided in 5 or more spans, and a large dome before the *miḥrāb* (e.g. al-madrasa al-Muẓaffariyya and al-madrasa al-Ašrafiyya of Ta'izz);

IB 2 - with tripartite prayer-hall, covered with

a) six domes of equal dimensions, ar-

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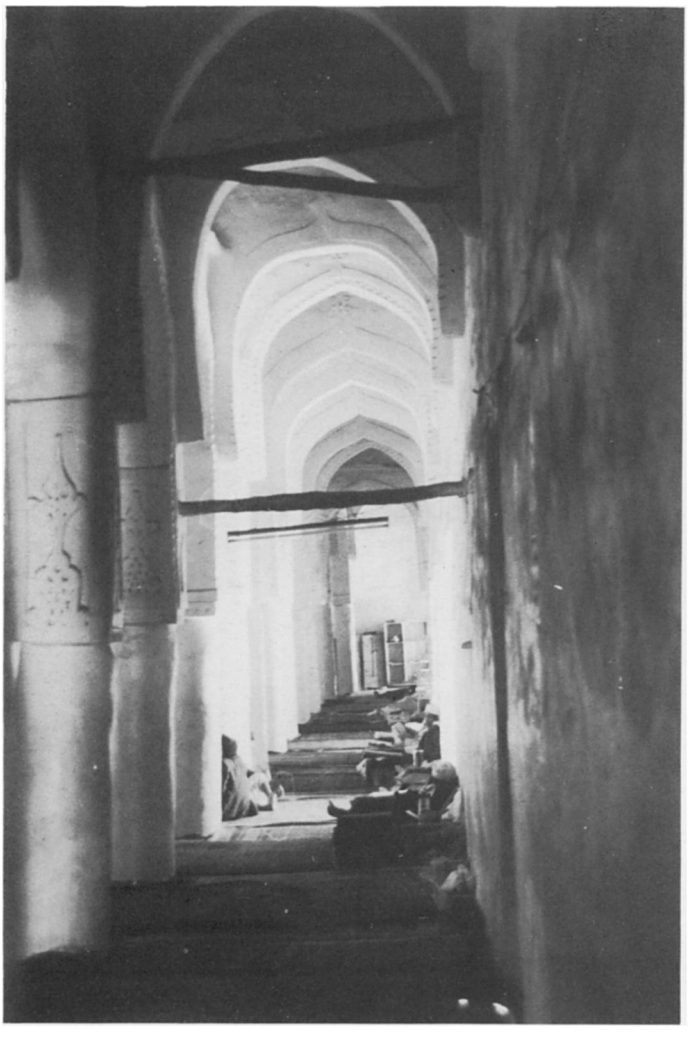

Fig. 40 - Ṣa'da: Ǧāmi' al-Hādī. (Dep. CS 15947/6; M. Jung).

Fig. 41 - Ṣa'da: Ǧāmi' al-Hādī. (Dep. CS 15914/13; P. Cuneo).

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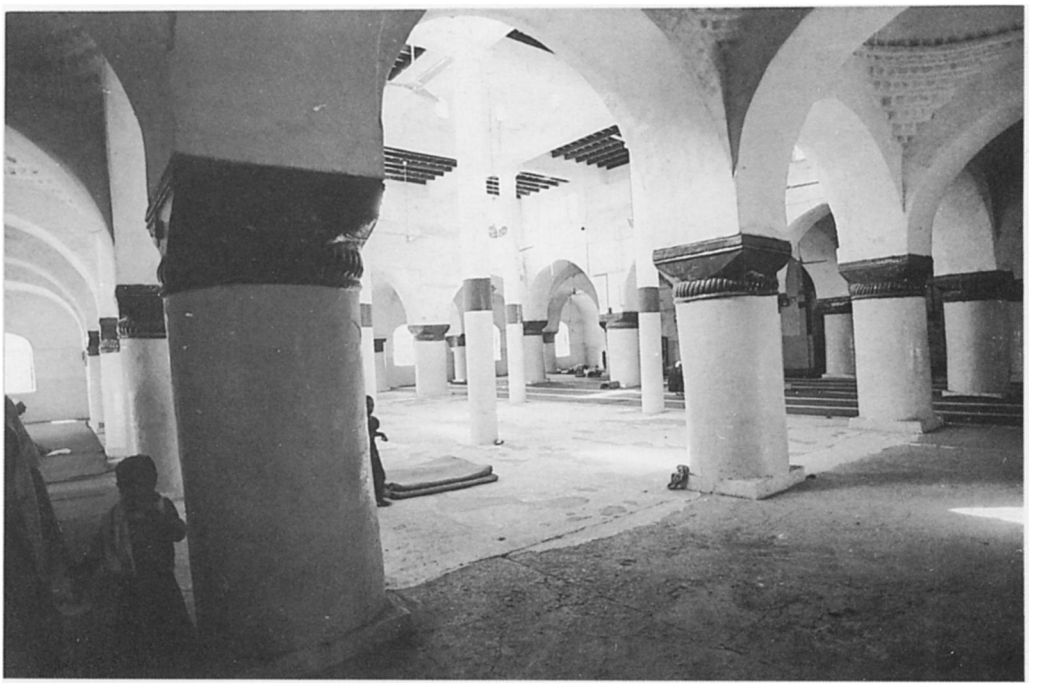

Fig. 42 - az-Zaydiyya: al-Ǧāmi‘ al-Kabīr. (Dep. CS 15888/36; U. Scerrato).

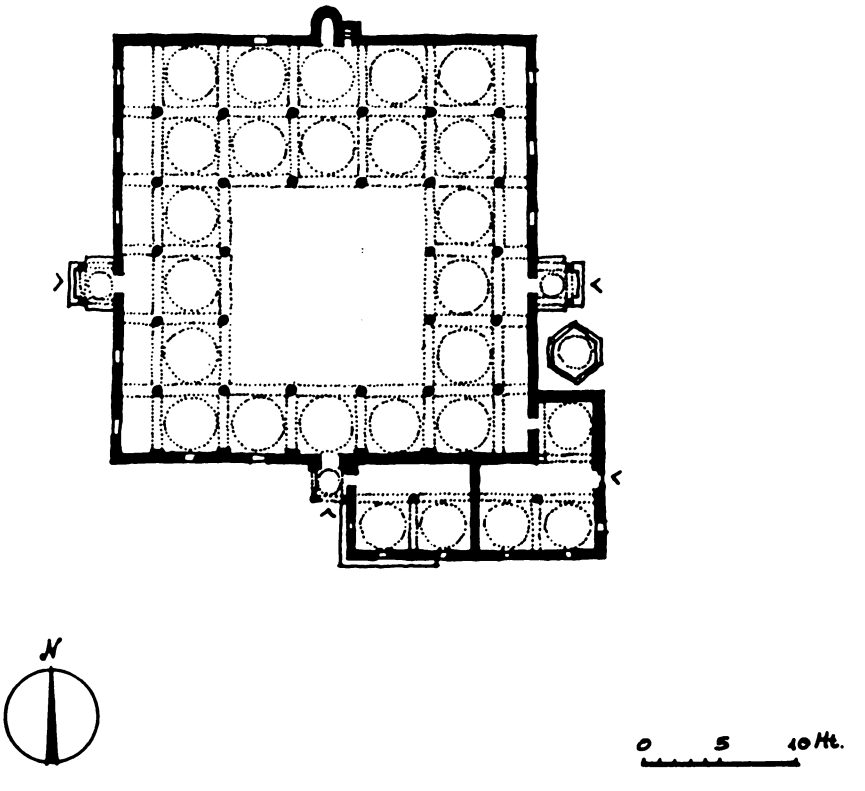

Fig. 43 - az-Zaydiyya: al-Ǧāmi‘ al-Kabīr, the plan.
(E. Gatti 1986).

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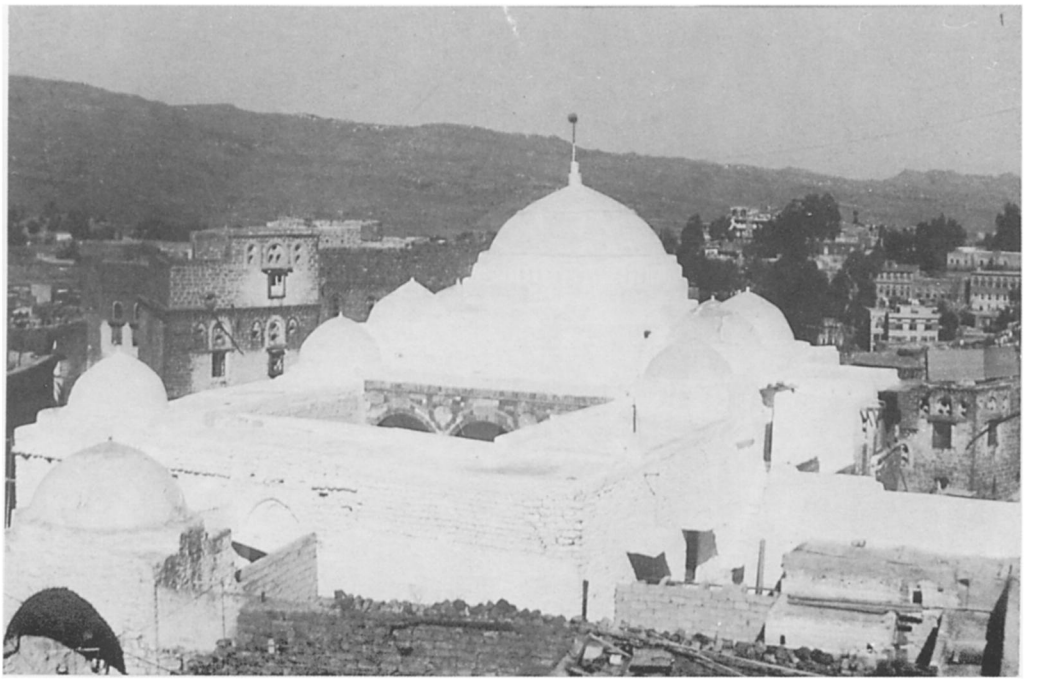

Fig. 44 - 'Ibb: madrasa 'Āsad ad-Dīn. (Dep. CS 13385; G. Ventrone).

ranged in two groups of three (e.g. al-madrasa al-Mu'tabiyya of Ta'izz; an exception is the Great Mosque of az-Zaydiyya: figs. 42-43, which has ten domes in two groups of five);

b) a dome before the *miḥrāb*, between two pairs of smaller domes on both sides (e.g. at 'Ibb, al-madrasa Āsad ad-Dīn: fig. 44; Zabīd, al-madrasa al-Kamaliyya);

c) a central dome between two smaller domes (e.g. at Bayt al-Faqīh, al-Ǧāmi' al-Kabīr: figs. 45-46);

IB 3 - with prayer-hall covered by two domes of equal size (e.g. at Ṣan'ā', al-Ǧanā).

Beyond the *Ǧāmi' mosques*, Type IB includes many *masǧid* and *madrasa*.

The typology of the dome court is also present in the central plateau at San'ā' due to Ottoman influence, while the Tihāma survey, at least in this first phase, has revealed fewer examples of it. A significant feature of this type of mosque is that usually the court is practically square and is of rather small area compared with the covered part.

Despite the fact that its features are almost unique in Yemenite architecture, the Ǧāmi' al-Kabīr at Ḥays can also be attributed to Type IB. This court mosque was originally covered with long barrel vaults, later partly replaced by domes of the Indian type. Its typical features include the main entrance iwān placed at the east end of the south facade, while another large iwān dominates the southern side of the court opposite the prayer hall, and the original symmetrical distribution of the three entrances on either side of the court, recalling Irano-Seljuk culture and its Syro-Anatolic variants.

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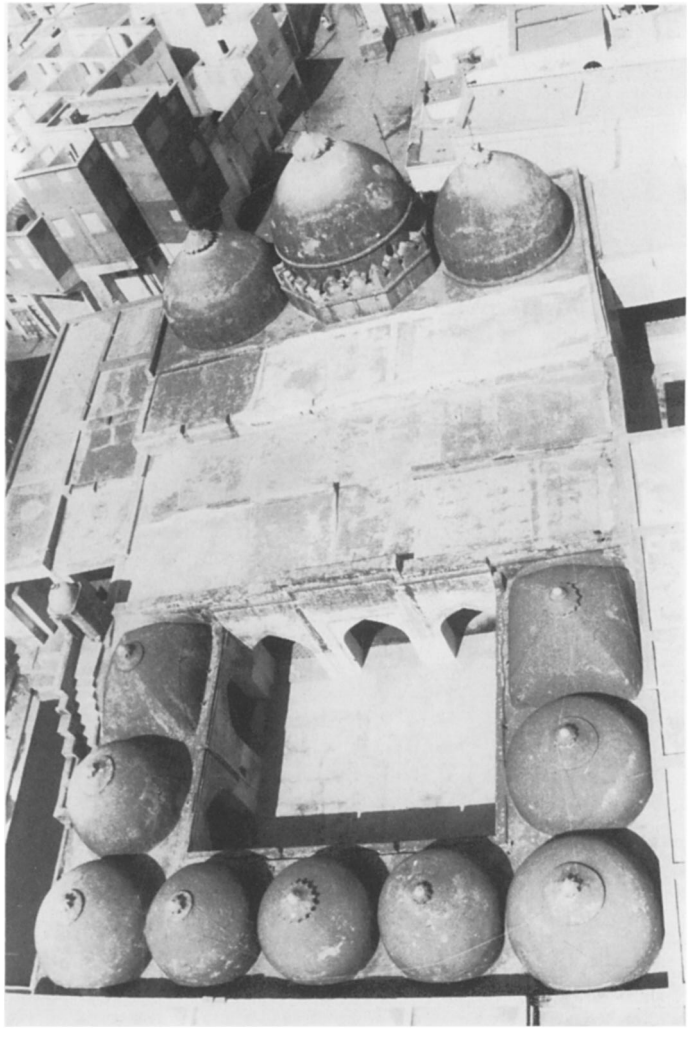

Fig. 45 - Bayt al-Faqīh: al Ğāmi' al-Kabīr. (Dep. CS 15966/13; M. Jung).

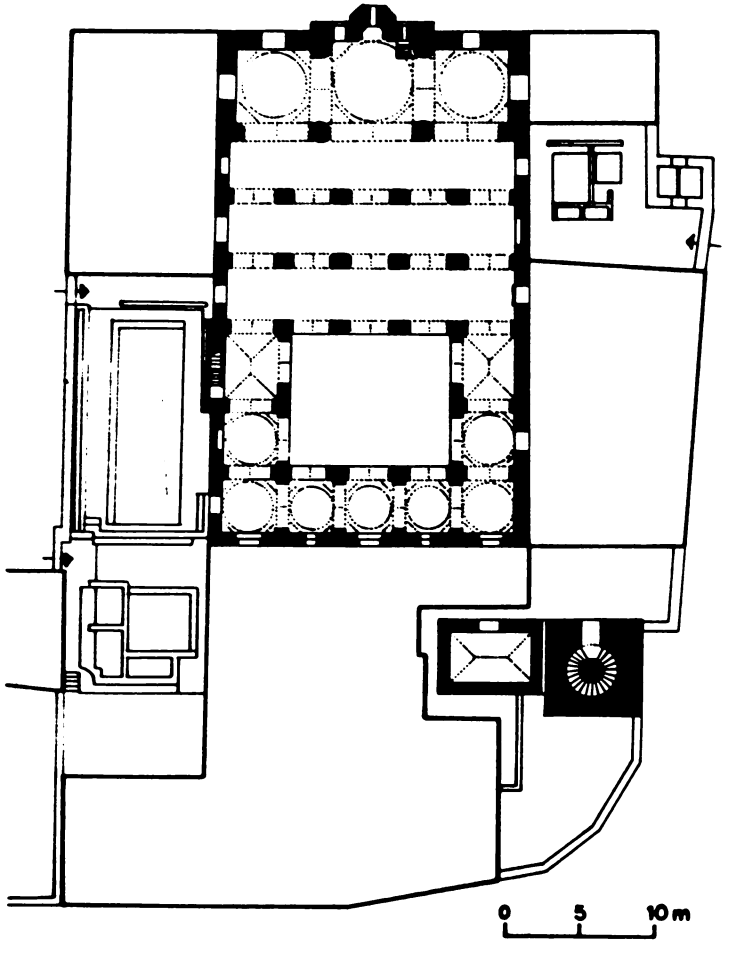

Fig. 46 - Bayt al-Faqīh: al-Ğāmi' al-Kabīr, the plan. (N. Olivieri 1986).

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II - *Mosques with Unrelated Court* (Table 3)

IIA - Flat-roofed mosques

IIA 1 - with latitudinal prayer hall

a) with aisles parallel to the *qiblī* wall (from a minimum of two to a maximum of seven aisles (e.g. Ṣa'da, M. aḏ-Ḏahab, M. an-Nūr; Sāqayn, Ġ. Imām az-Zatīn). The most frequent type of it can be found in the central regions as well as in Tihāma;

b) with aisles perpendicular to the *qiblī* wall, 'basilical mosque'; for the time being, evidence of this type has only been found in three buildings at Ṣa'da: M. an-Nizārī, fig. 47, M. al-Yābis, M. aḏ-Ḏawīd);

IIA 2 - with long rectangular prayer hall, 'templar mosque'

a) with aisles parallel to the *qiblī* wall; it is attested to only in the central inner regions (e.g. Tamūr, al-Masǧid; Kawkabān, M. aš-Šarīfa; Ṣan'ā', M. aṭ-Ṭāwūs);

b) with aisles perpendicular to the *qiblī* wall (e.g. Ṯulā, M. Sa'īd, Kawkabān, M. 'Abd Allāh al-Manṣūr);

IIA 3 - with square prayer hall

a) with aisles parallel to the *qiblī* wall, from two to seven aisles (e.g. Ḥūṯ, M. al-'Ašīš; Kawkabān, al-Ǧāmi' al-Kabīr; Šahāra, M. al-'Aqaba);

b) with aisles perpendicular to the *qiblī* wall (e.g. Ṯulā, M. al-Maḥāmid).

This type is present only in the inner regions.

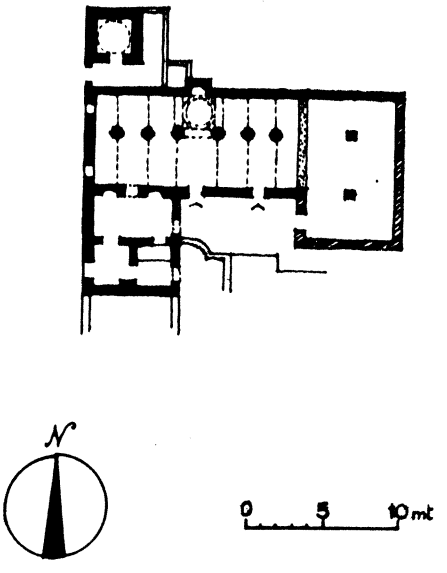

Fig. 47 - Ṣa'da: Masǧid an-Nizārī, the plan. (E. Gatti 1986).

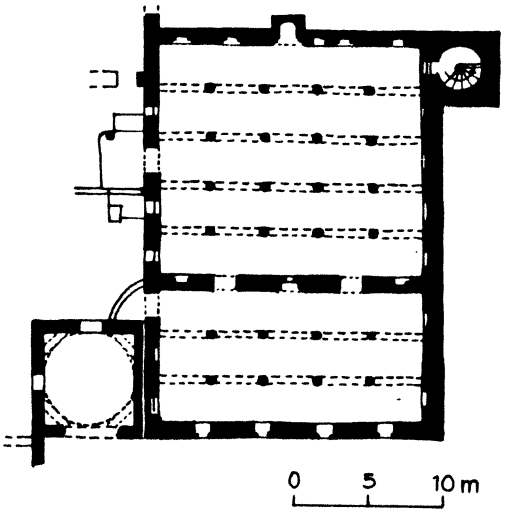

Fig. 48 - Šibām Kawkabān: al-Ǧāmi' al-Kabīr, the plan. (N. Olivieri 1986).

IIB - Domed mosques (Table 3)

IIB 1 - with prayer hall covered with one single dome

a) without side rooms (e.g. az-Zuhra, M. Banī Ǧibrān);

b) with two vaulted rooms at the sides (e.g. Ḥays, al-Madrasa al-Iskandariyya);

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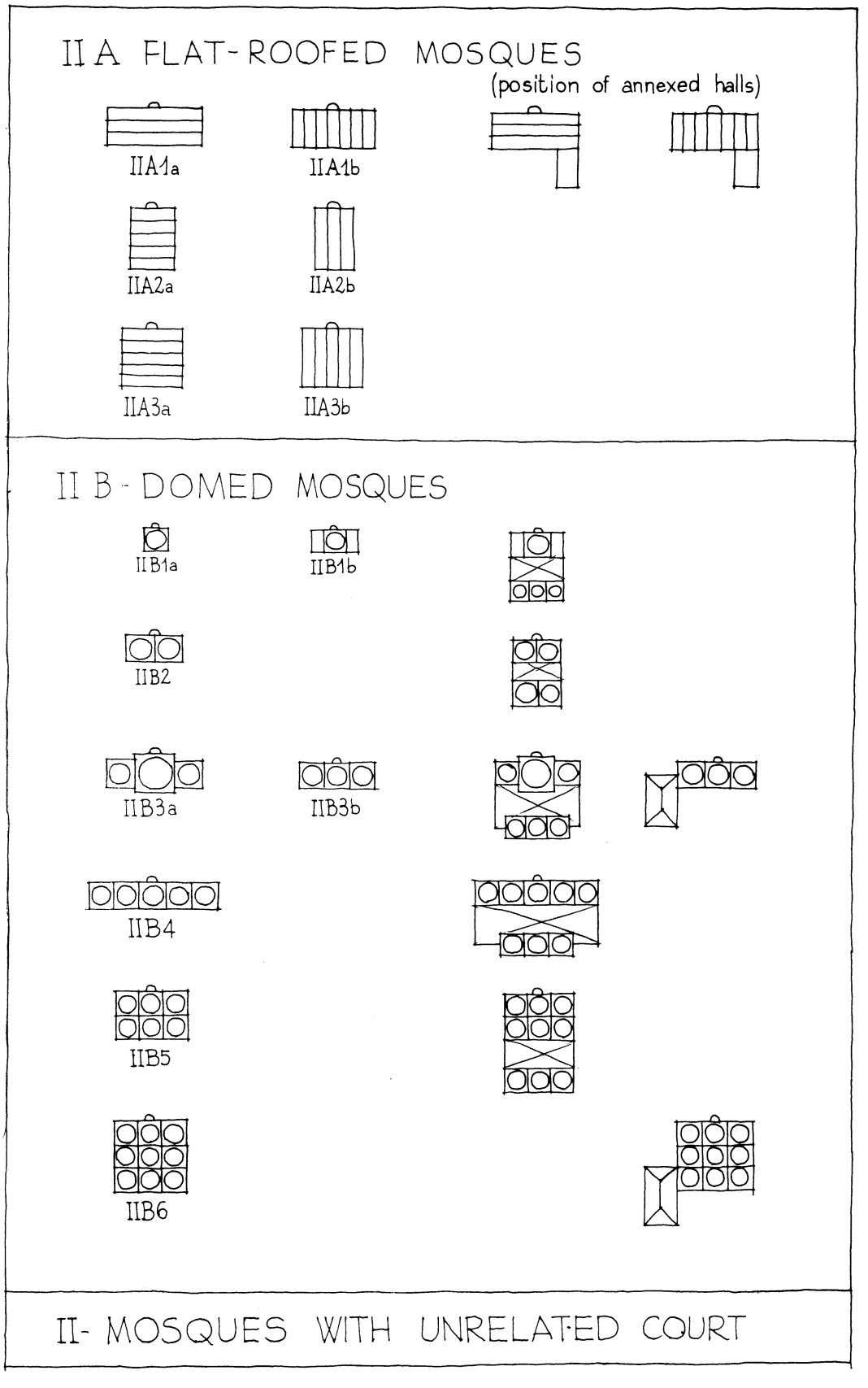
Table 3



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IIB 2 - with prayer hall covered with two domes (e.g. Zabīd, M. ad-Dayba; Ḥays, M. aṭ-Ṭawsī);

IIB 3 - with three domes

a) with a larger central dome (e.g. at-Tuḥaytā, M. al-Mazğāğī: figs. 49-50; Dayr Harīš: figs. 51-52);

b) with domes of equal size (e.g. al-Mutayna: figs. 53-54);

IIB 4 - with five domes set side by side (e.g. Sūq al-Ġarrāḥi: figs. 55-56);

IIB 5 - with six domes of equal size in two parallel rows (e.g. al-Quṭay': fig. 57);

IIB 6 - with nine domes covering a square prayer hall (e.g. Bayt al-Faqīh, M. al-Mušra'a, figs. 58-59).

Many of these mosques are preceded by one or more flat-roofed bays (e.g. al-Quṭay'); opposite the prayer hall there is a pavilion, usually domed (e.g. at-Tuḥaytā, M. al-Mazğāğī), at times equipped with a *miḥrāb* and, like the annexes of type IIA mosques, serving various purposes.

On the whole the dome buildings of Tihāma show a certain number of connections with some architectural elements of Muslim India. This fact is particularly evident in a large number of mosques, like Bayt al-Faqīh. It would be interesting to look for probable influences from pre-Moghul architecture in Gujarat and Deccan.

One of the most interesting results of the 1985 Campaign was the detailed survey of the town of Ṣa'da, including the Great Mosque for which only topographical data have so far been available. On the basis of the invaluable data offered by Elke Niewöhner-Eberhard's monographical study (*Ṣa'da*, Wiesbaden 1985) we undertook a closer study of the city's mosques, paying particular attention to the architectural decoration. This brought out some peculiar features of the local religious architecture, evident in the layout of the prayer hall and its annexes, in the individual structural elements, and in some purely decorative aspects.

The only exception here is the Great Mosque named after the Imām al-Hādī which appears to have reached its present form through 16th century modifications, belongs to the group of classical mosques with courtyards, Type IA. The most ancient mosques in North Yemen, such as the Ğāmi' al-Kabīr at Ṣan'ā', al-Ġanad and Zabīd also belong to this group. The remaining fifteen mosques whose prayer halls we were able to examine, all belong to group II, without an actual courtyard in the architectural sense; most of them have a surrounding area varying in shape and size and serving various purposes, as was the case with the other mosques belonging to this group in other parts of the country.

They are all flat-roofed, with prayer halls extending in width rather than in length: 12 have aisles parallel to the *qiblī* wall (Type IIA 1*a*), while in the remaining three have aisles perpendicular to it (Type IIA 1*b*).

The scanty data we have at our disposal show evidence of type IIA 1*b* going back to the end of the 14th century, like the an-Nizārī mosque, while Type IIA 1*a* is to be placed in the 15th century: M. ad-Dahab, M. az-Zaydān, which is earlier than 1442 A.D., and M. at-Tūt (*c.* 1462 A.D.).

Most of the type IIA 1*a* mosques usually have only two aisles, but the M. as-Subaiḥ, M. aš-Šaybān, M. al-Qaṣr and M. al-Hiğār have three. Moreover, almost all of them have lateral extensions, generally towards the east, very often corresponding to an extension of the prayer hall, as in the mosques of al-'Ariz, as-Subaiḥ and az-Zaydān.

At times covered oratories are set to the east of the fore-court, as in M. an-Nūr, or to the west of the prayer hall, as in the mosques of al-Qaṣr and al-'Ariz.

Rooms serving various purposes and opening into the same area are to be seen in the al-'Ariz, as-Subaiḥ and aš-Šaybān mosques.

This room-arrangment and, to a lesser extent the covered oratories, at times coexisting as in M. al-'Ariz, characterize practically all Yemenite religious buildings,

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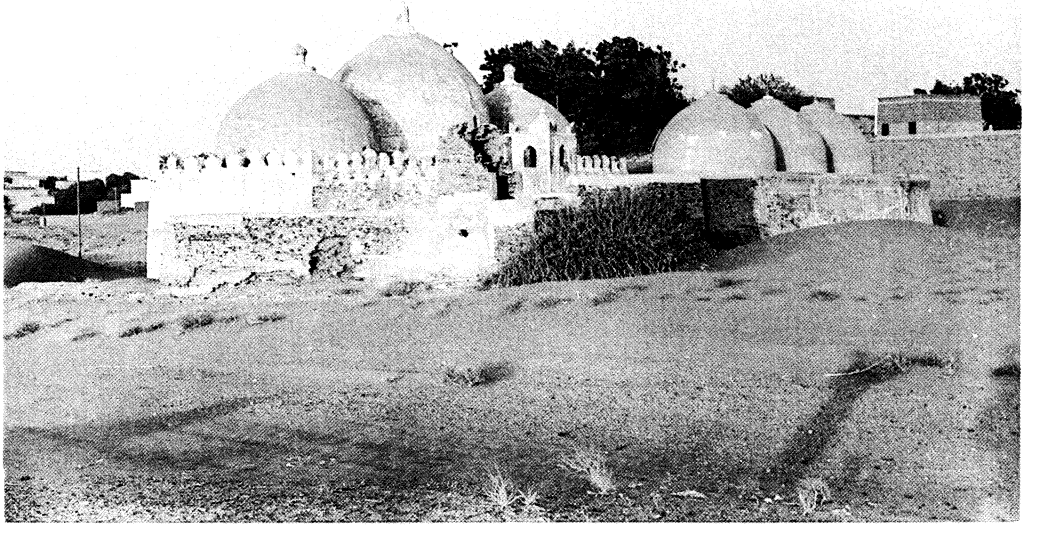

Fig. 49 - at-Tuḥaytā: Masǧid al-Mazǧāǧī. (Dep. CS 15900/10a; U. Scerrato).

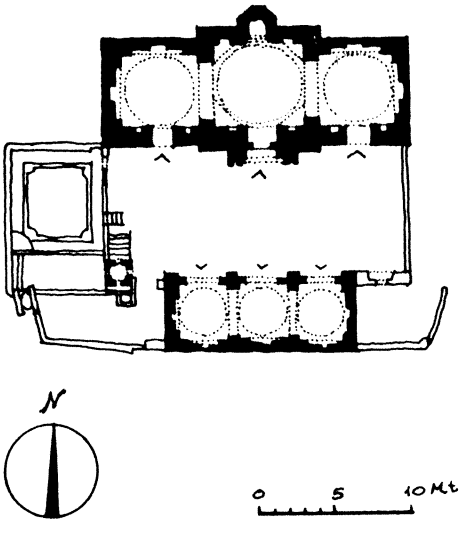

Fig. 50 - at-Tuḥaytā: Masǧid al-Mazǧāǧī, the plan. (V. Labianca 1986).

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Fig. 51 - Dayr Harīš: al-Masğid. (Dep. CS 15894/26a; M. Jung).

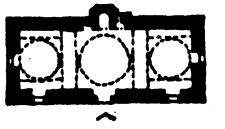
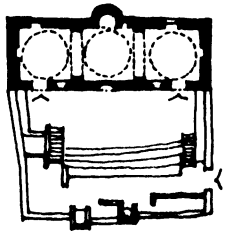


Fig. 52 - Dayr Harīš: al-Masğid, the plan. (V. Labianca 1986).



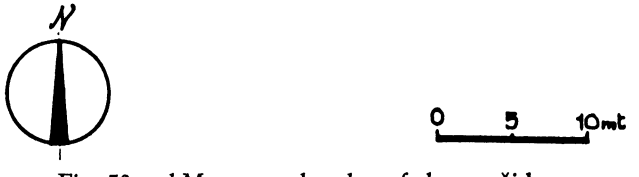


Fig. 53 - al-Mutayna: the plan of the masğid. (E. Gatti 1986).

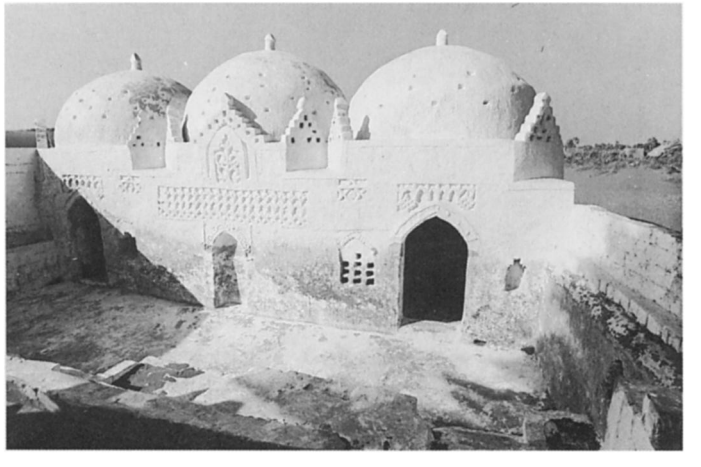


Fig. 54 - al-Mutayna: the Masğid. (Dep. CS 15899/16a; U. Scerrato).

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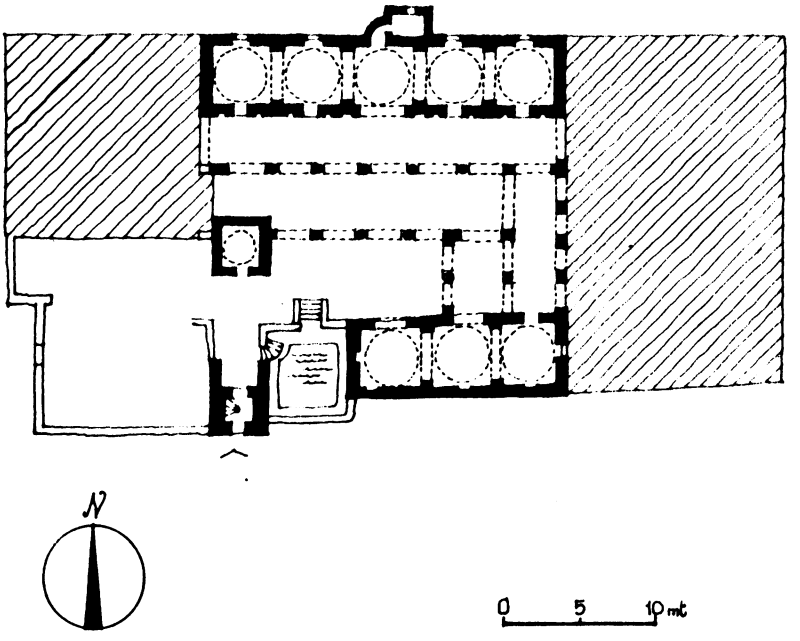

Fig. 55 - Sūq al-Ġarrāḥī: al-Ġāmi' al-Kabīr, the plan. (V. Labianca 1986).

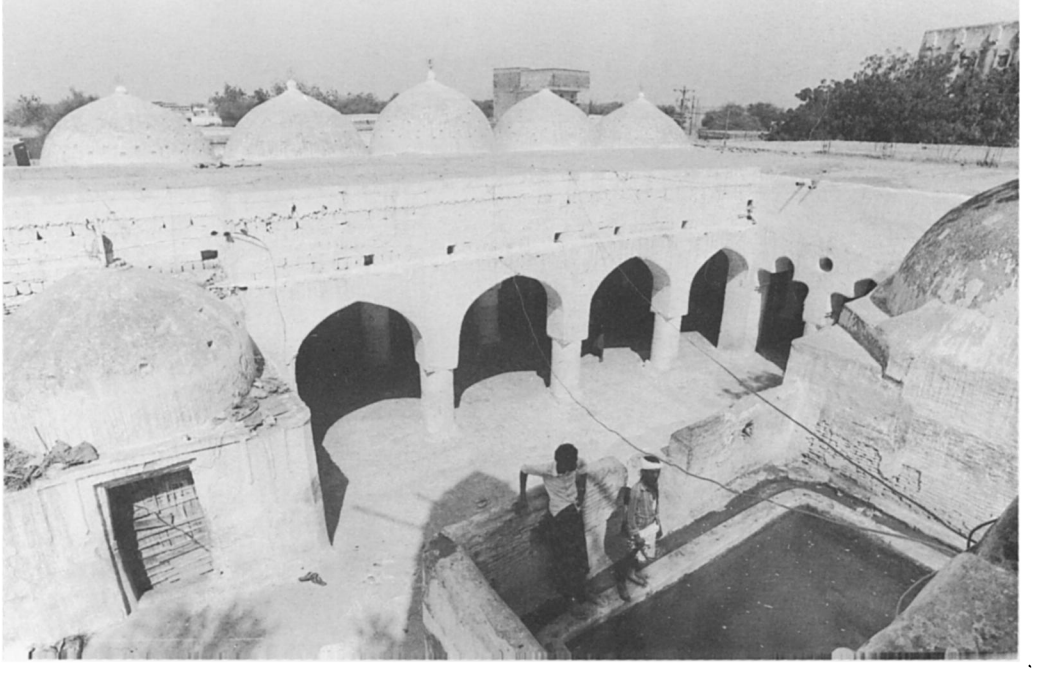

Fig. 56 - Sūq al-Ġarrāḥī al-Ġāmi'. (Dep. CS 15884/22a; U. Scerrato).

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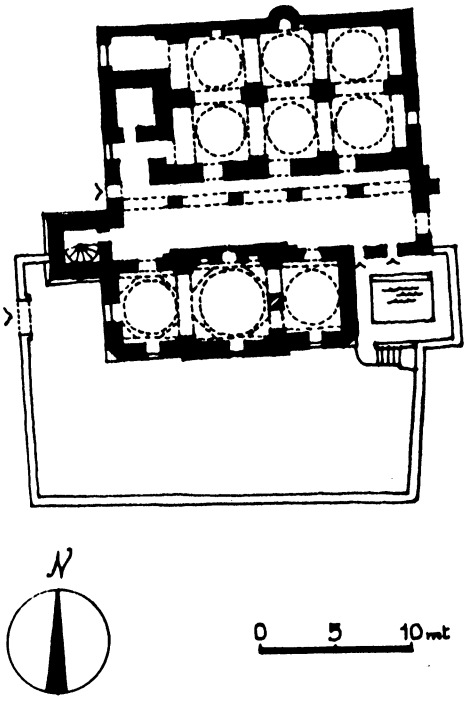

Fig. 57 - al-Quṭay‘: al-Ğāmi‘ al-Kabīr, the plan. (V. Labianca 1986).

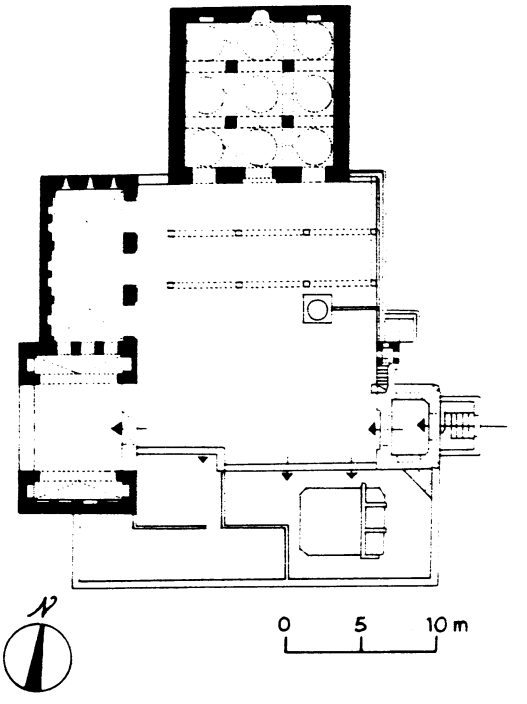

Fig. 58 - Bayt al-Faqīh: Masğid al-Mušrā‘a, the plan. (N. Olivieri 1986).

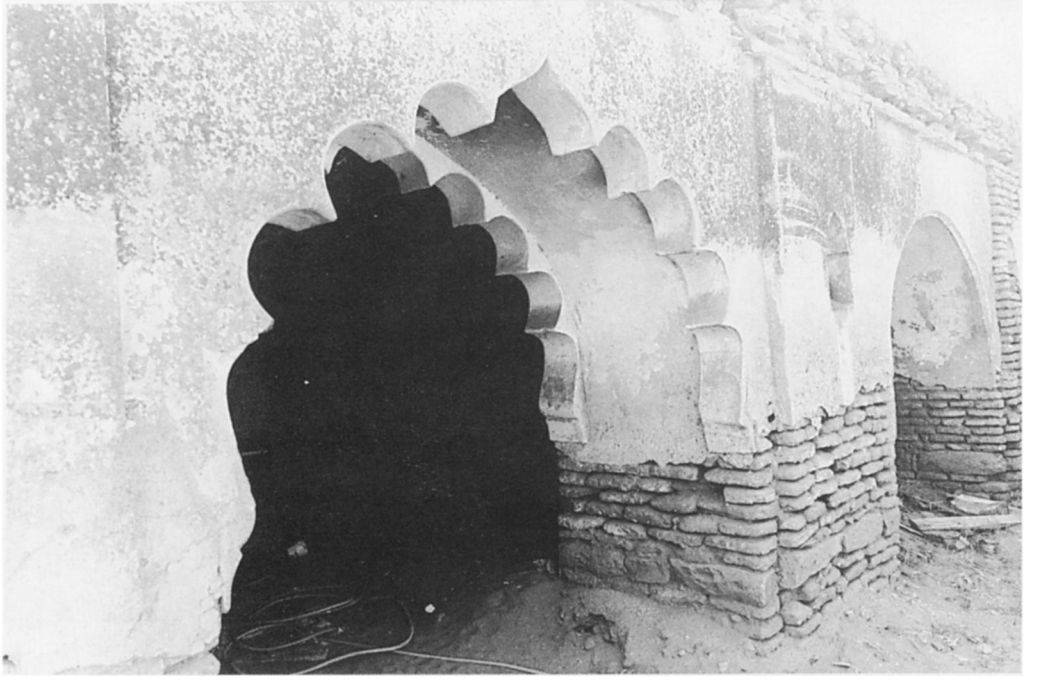

Fig. 59 - Bayt al-Faqīh: Masğid al-Mušrā‘a, western pavilion. (Dep. CS 15896/24; U. Scerrato).

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appearing both in the central area of the plateau, as for example at Ġaymān, and in Tihāma. In the latter area, however, they almost always have the typical domed roofing.

The only evidence of Type IIA 1*b* is represented by the aḍ-Ḍawīd, an Nizārī and al-Yābis mosques. However, these mosques show other very interesting structural and decorative features. They all have tall, slender columns, lobed or polystyle in plan (fig. 60); the only comparable example in North Yemen is at Ẓafār Dībīn.

This is not the only feature these mosques have in common with this royal 13th century religious complex: the characteristic small glazed cups, usually in turquoise, which form part of the stucco decoration around gates and windows, are in fact to be seen at Ẓafār, in the al-Yābis (fig. 62) and an-Nizārī mosques, as well as the az-Zaydān mosque and the northern entrance to the M. ad-Da'fān in Ṣa'da. This kind of decoration had also been the object of special attention in the previous campaign (IsMEO Activities, *EW*, 34, 1984, p. 450), and we noted that it can also be seen in the Ġāmi' of Ḍībīn and ar-Rawḍa (fig. 63), as well as in the al-Abhar and Ṣalāḥ ad-Dīn mosques of Ṣan'ā'. It can, in fact, be considered one of the peculiar features of Yemenite architectural decoration. As far as we know, however, it is limited to the northern and central areas.

Another feature that, to our present knowledge, is exclusive to these regions is a particular type of polylobate arch which we could define as the type 'à pendentifs'. It can be found on the facades of the mosques of Ẓafār Ḍībīn and Ḍībīn (B. Finster, *Archäologische Berichte aus dem Yemen*, I, 1982, pl. 124 a), on the outer annex of the Ṭulā Ġāmi' prayer hall (see L. Golvin and M.-Ch. Fromont, *Thula*, Paris 1984, ph. 18) and there are various occurrences in the city of Ṣa'da, both as a real arch and as stucco bas-relief decoration on walls. Half an arch of this kind remains attached to the corner of a mausoleum at the west end of the Ġāmi' al-Hādī forecourt. Moreover, in the mosque of al-'Ariz similar arches decorate the back wall of the covered area annexed to the east side of the prayer hall, as well as the brickwork on the northern wall of the mosque itself and the building nearby (fig. 61).

In the Mā'rib province arches 'à pendentifs' can be seen on the facade of the prayer hall of the al-'Uqda mosque, and in this case they are very close to those of the Ẓafār mosque.

Finally, a more stylized version is to be seen in the arches surrounding the court of the Great Mosque of ar-Rawḍa, in the Ṣan'ā' region, apparently belonging to a later phase. This kind of highly decorated arch that, we believe, in Yemen derives from models introduced from Fatimid Egypt (F. Shafi'i, 'An Early Fatimid Mihrab in the Mosque of Ibn Tulun', in *Bulletin of the Faculty of Arts*, XV 1, 1953, pp. 67-72) is anyway variously testified in the Islamic world in different versions, from Spain to Ifriqyya, to Egypt, Mesopotamia, up to Anatolia (see Finster, *op. cit.*, pp. 268-69).

Another project for the immediate future concerns the northern monumental cemetery of Ṣa'da, including the epigraphic survey and the typology of tomb-stones, some of which show considerable stylistic and technical qualities.

In the cemeteries to the North of Ṣa'da, a group of tetrapyla mausolea which seem not to have parallels in Yemen and which are furthermore covered by a characteristic webbed and lobed dome, that we also find in some mausolea built in the area to the South of the al-Hādī Mosque, deserves our attention. While the kind of webbed or lobed dome is well testified in the frame of Rasulid and Tahirid Architecture in the South of the country, the webbed and lobed type seems limited to the area of Ṣa'da, where one of the most ancient instances may probably be shown in the dome in front of the *miḥrab* of the an-Nizārī Mosque, that we deem may be datable to the 15th century.

It is, in fact, possible that these magnificent buildings provided the inspiration

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Fig. 60 - Ṣa'da: Masǧid al-Yābis, lobed columns in the oratory. (Dep. CS 15838/27; U. Scerrato).

Fig. 61 - Ṣa'da: arch 'à pendentifs', building near the Masǧid al-'Ariz. (Dep. CS 15945/14; M. Jung).

Fig. 62 - Ṣa'da: decoration with glazed cups in the Masǧid al-Yābis. (Dep. CS 15943/34; M. Jung).

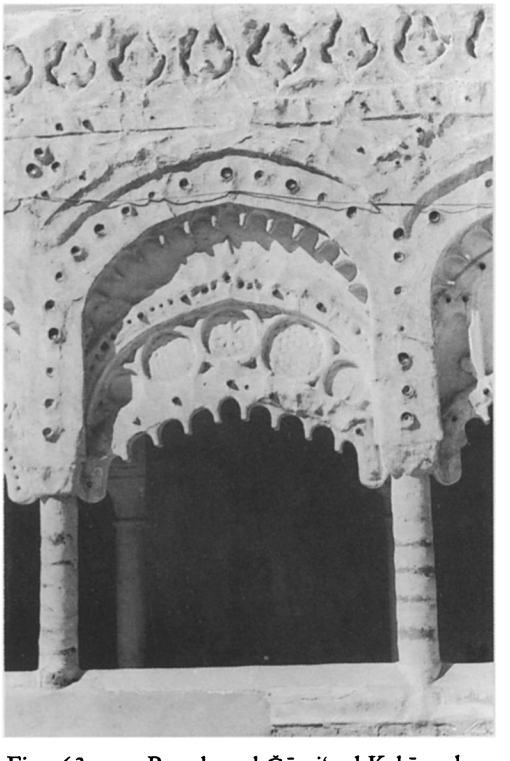

Fig. 63 - ar-Rawḍa: al-Ǧāmi' al-Kabīr, decoration with glazed cups in the court. (Dep. CS 15398/32a; U. Scerrato).

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Fig. 64 - Ṣa'da: mausoleums in the northern cemetery. (Dep. CS 15942/11; M. Jung).

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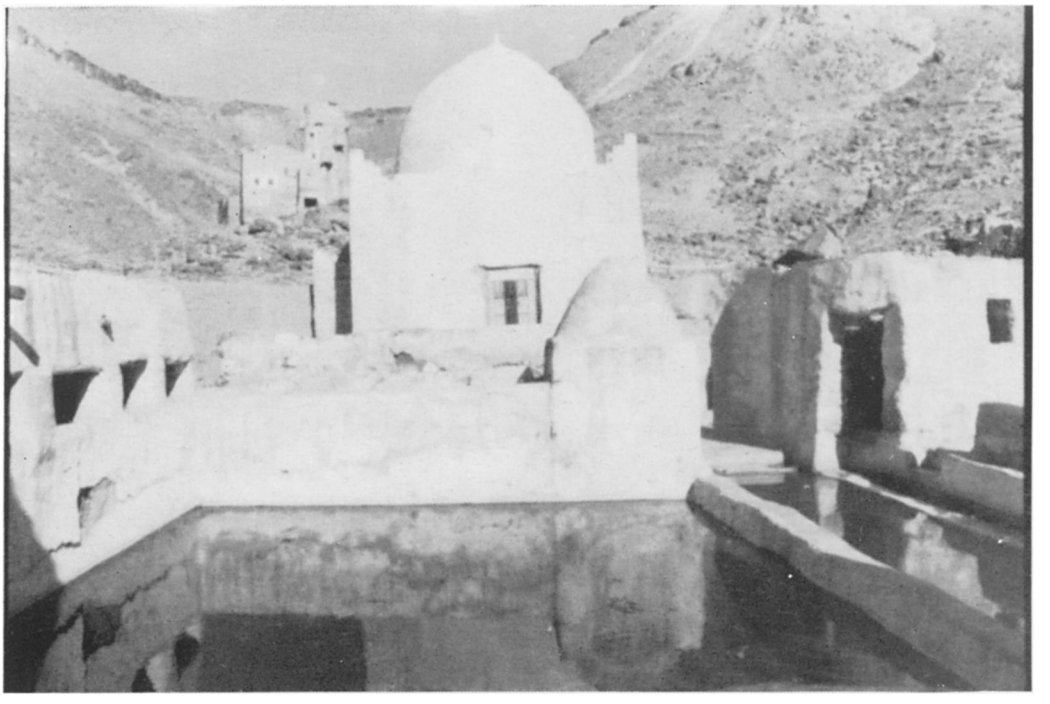

Fig. 65 - Sāqayn: mausoleum at East of Masǧid ad-Dā'ī.
(Dep. CS 15854/12a; U. Scerrato).

for the funerary monuments which seem to have formed the original nucleus around which the cemetery developed. This would place the first phase at the beginning of the 15th century.

We are how carrying out the architectural study of the characteristic domed mausoleums. This study will, moreover, form part of a more general research project begun last year and dedicated to the country's funerary monuments. The field of research is therefore being expanded to include the mausoleums annexed to the Ǧāmi' al-Imām al-Qāsim of Šahāra, the M. ad-Dā'ī of Sāqayn (fig. 65) and some isolated buildings of Ḥūṭ, to mention only a few of those visited this year.

Archaeological research included the collection of surface material from the following sites, as well:

— Ṣa'da, cemeteries.
— Ma'in (city).
— Dayr Harīš.
— 'Umm Layla.
— Zabīd (Masǧid al-Bāša).
— al-Mahǧam.
— Barāqiš (city).
— Bayt 'Aṭā.
— Old al-Manṣurīyya.

The Mission is also carrying out research and surveys on historical-urbanistic topics, and has already launched two complementary kinds of investigation: one dealing with typological and functional features, the other with the morphological and spatial aspects.

The first type of inquiry aims at listing and classifying the main urban structures of ancient and medieval origin; in many cases the historical importance of such structures depends on the fact that layout has been extraordinarily well preserved from the suc-

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cessive modifications and stratifications so common in most towns in other Muslim countries.

We are therefore dealing with evidence of what could well be a sort of 'original Islamic town-planning', which at the same time shows urban features typical of this part of the Arabian peninsula. This may, in fact, be a case of the persistence of ancient spatial patterns preserved on the sites, possibly thanks to practically unchanging life-styles, deriving from the organization of dwellings that evolved through pre-Islamic southern Arabian culture. One of the aims of our typological classification of surviving urban centres is to verify this possibility. The typology seems to correspond, though not in all points, to the large-scale context of the human settlements that are still to be seen in the different geo-cultural areas of the country: the coastal plain, the plateau and the predesert area.

Particular attention is being focused on the cores of the major urban centres, where various kinds of public buildings and spaces were created in close spatial and functional relationships: mosque, madrasa, market, bath, samsara and funduq. We are also studying their locations in connection with the street layout and city walls and citadels when they occur.

Among the most compact, structurally complex urban centres, research has so far touched on:

— in the Tihāma coastal area: al-Luḥayya, al-Ḥudayda, al-Muḫā;

— in the Tihāma inland area: Ḥays, Bayt-al-Faqīh, al-Manṣūriyya;

— in the northern plateau area: Ṣa'da, Sāqayn, 'Umm Layla, Šahāra;

— in the central plateau area: Ṣan'ā, 'Amrān, Šibām-Kawkabān, Ṯulā, Ḥağğa;

— in the southern plateau area: Ḏamār, Ǧibla, Radā', 'Ibb.

Some detailed urban analyses will be prepared for centres chosen as representative of their geographical areas: the cities of al-Luḥayya, Ḥays, Ṣa'da, 'Amrān and 'Ibb, for which a parallel study of the religious buildings and the historical, artistic and epigraphical contexts is also under way. Surveys are to be conducted on a series of buildings and open spaces of these towns, with the aim of reconstructing and piecing together their architectural and urbanistic layouts.

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Giovanna Ventrone,
Paolo Cuneo

List of Islamic Monuments and Sites Visited during the Campaigns of the Years 1984 and 1985

Province of Ṣa'da

ṢA'DA, 1985
Ǧāmi' al-Hādī (figs. 39-41)
Masǧid al-'Ariz (fig. 61)
Masǧid ad-Da'fān
Masǧid aḏ-Ḏahab
Masǧid aḏ-Ḏawīd
Masǧid al-Hiǧār
Masǧid al-Hīrī
Masǧid an-Naǧǧār
Masǧid an-Nizārī (fig. 47)
Masǧid an-Nūr
Masǧid al-Qaṣr
Masǧid aš-Šaibān
Masǧid aš-Šamrī
Masǧid as-Subaiḥ
Masǧid aṭ-Ṭāyī
Masǧid at-Tūt
Masǧid al-'Ulayyān
Masǧid al-Yābis (figs. 60, 62)
Masǧid az-Zaidān
Western Cemetery (fig. 64)
'UMM LAYLA, 1985
al-Masǧid
al-Qaṣr
SĀQAYN, 1985
Ǧāmi' Imām az-Zatīn
Masǧid ad-Dā'ī
Masǧid al-Ma'īn
Masǧid al-Muqawwar
Masǧid an-Nifāš
Masǧid al-Wasīṭ

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Province of Ḥaǧǧa

ŠAHĀRA, 1985
Ǧāmi' al-Imām al-Qāsim
Masǧid Dār al-'Aqaba
Masǧid Dī-Šarafīn
ẒAFĀR DĪBĪN, 1984
Masǧid al-Imām al-Manṣūr
DĪBĪN, 1984
al-Ǧāmi' al-Kabīr

Province of Mā'rib

BARĀQIŠ, 1985
Mausoleum/mosque
AL-'UQDA, 1985
al-Masǧid
MA'RIB, 1984
Ǧāmi' Sulaymān

Province of Ṣan'ā'

ḤARF, 1985
al-Ǧāmi' al-Kabīr
ḤŪṮ, 1985
al-Ǧāmi' al-Kabīr, or ǧ. aš-Šigāra
Masǧid al-A'lā
Masǧid 'Ašīš
Masǧid aṣ-Ṣaumi'a
Mausoleum no. 1
Mausoleum no. 2
Mausoleum no. 3
ṮULĀ, 1984
al-Ǧāmi' al-Kabīr
Madrasa Šaraf ad-Dīn
Masǧid Ġurze
Masǧid Mabhān
Masǧid Sa'īd
Qubba Madrasat al-Hādī
ŠIBĀM KAWKABĀN, 1984
al-Ǧāmi' al-Kabīr
Eastern funerary complex
KAWKABĀN, 1984
al-Ǧāmi' al-Kabīr (fig. 48)
Masǧid 'Abd Allāh al-Manṣūr
Masǧid aḍ-Ḍulā'i
Masǧid al-Mašhad
Masǧid aš-Šarīfa
ḎŪ MARMĀR, 1984
al-Masǧid
al-Qaṣr
AR-RAWḌA, 1984, 1985
al-Ǧāmi' al-Kabīr (figs. 38, 63)
Masǧid Ḥamza
Masǧid aš-Šaǧay
ḤADDA, 1984, 1985
Masǧid al-Qubba al-Qadīma
Masǧid as-Sayālī
ṢAN'Ā', 1984, 1985
al-Ǧāmi' al-Kabīr
Masǧid al-Abhar
Masǧid 'Alī
Masǧid 'Aqīl
Masǧid al-Bakīriyya
Masǧid Dāwūd
Masǧid al-Filayḥī
Masǧid al-Ǧanāh
Masǧid al-Maḏhab
Masǧid al-Maḏrasa
Masǧid Mūsā
Masǧid al-Mutawakkil
Masǧid an-Nahrayn
Masǧid aṭ-Ṭāwūs
Masǧid Ṭalha
Masǧid Ṣalāḥ ad-Dīn
ǦIḤĀNA, 1984
Masǧid al-Qubba as-Sināniyya
Masǧid al-Buḫārī
ASNĀF, 1984
al-Ǧāmi' al-Kabīr ad-Dirā'a
Masǧid ad-Dirā'a
Masǧid al-'Abbās
ǦAYMĀN, 1984
Masǧid al-Ǧu'aydān
Masǧid al-Wašalī

Province of Ḏamār

ḎAMĀR, 1984
al-Ǧāmi' al-Kabīr
al-Madrasa al-Šamsīyya
Masǧid Yaḥya ibn Ḥamza
Qubba Dādaiyya
RADĀ', 1985
al-Ǧāmi' al-Kabīr
al-Madrasa al-'Amīriyya
al-Madrasa al-Baġdādiyya
Masǧid ar-Robāṭ

Province of 'Ibb

'IBB, 1984, 1985
al-Ǧāmi' al-Kabīr
Madrasat Āsad ad-Dīn al-Ġassānī (fig. 44)
Masǧid al-Ǧalāliyya

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Qubbat al-Masǧid al-Qadīm
Qubbat Šayḫ Ya'qūb
ĞIBLA, 1984
al-Ğāmi' al-Kabīr
Masǧid as-Sunna
Qubbat Šayḫ Ya'qūb
AL-MAḤĀDIR, 1985
al-Ğāmi' al-Kabīr
MAḤALLAT AL-MANĀRA, 1985
Masǧid al-Qaṣaba
AL-'UDAYN, 1985
al-Ğāmi' al-Kabīr
Madrasat an-Nūr
Old Ḥammām

Province of Ta'izz

AL-ĞANAD, 1984
Ğāmi' Ma'ān Ibn Ğabal
TA'IZZ, 1984
al-Madrasa al-Ašrafīyya
al-Madrasa al-Muẓaffarīyya
al-Madrasa al-Mu'tabīyya
Masǧid an-Nisā'
Masǧid 'Abd al-Hādī

Province of al-Ḥudayda

BĀĞIL, 1985
al-Ğāmi' al-Kabīr
BAYT 'AṬĀ', 1985
al-Masǧid
BAYT AL-FAQĪH, 1984, 1985
al-Ğāmi' al-Kabīr (figs. 45-46)
Masǧid al-'Aǧīl
Masǧid ad-Dūylānī
Masǧid al-Ḥalabī
Masǧid al-Mušra'a (figs. 58-59)
Masǧid as-Sūfī
Masǧid al-Wašalī
AḌ-ḌAḤĪ, 1985
al-Ğāmi' al-Kabīr
Masǧid Qāsim ibn 'Alī
DAYR HARĪŠ, 1985
al-Masǧid (fig. 52)
AL-FĀZZA, 1985
al-Masǧid
SŪQ AL-ĞARRĀḤI, 1985
al-Ğāmi' al-Kabīr (fig. 56)
ḤAYS, 1984, 1985
al-Ğāmi' al-Kabīr
Madrasat al-Hitāri
Madrasat at-Takiyya
Masǧid al-Hanūd
al-Madrasa al-Iskandariyya
Masǧid al-Kelliyya
Masǧid al-Mūfī 1
Masǧid al-Mūfī 2
Masǧid as-Sayyid Ğa'far
Masǧid aṭ-Ṭawsī
AL-ḤUDAYDA, 1984
AL-LUḤAYYA, 1985
al-Ğāmi' al-Kabīr
Masǧid al-Ğabalī
Masǧid al-Murġānī
AL-MANṢŪRIYYA, 1984
al-Ğāmi' al-Kabīr
Masǧid as-Sūq
Masǧid aṭ-Ṭalāṭ
AL-MARĀWI'A, 1985
al-Ğāmi' al-Kabīr
AL-MIDAMMA, 1985
al-Masǧid
AL-MUḤA', 1984
Masǧid 'Abd Allāh Sulṭān
Masǧid al-Ḥaila
Masǧid al-Ḥammām
Masǧid al-Muġaynī
Masǧid aš-Šāḏilī
Masǧid Sa'm ad-Dahr
AL-MUTAYNA, 1985
al-Masǧid (figs. 53-54)
AL-QUṬAY', 1985
al-Ğāmi' al-Kabīr (fig. 57)
AT-TUḤAYTĀ, 1985
Masǧid al-Mazǧāǧī (figs. 49-50)
ZABĪD, 1984, 1985
al-Ğāmi' al-Kabīr
al-Madrasa al-Kamāliyya
Masǧid al-Āšā'ir
Citadel mosque
Mausoleum of Ways al-Ḫaranī
Mausoleum of Abū Mūsā al-Āš'arī
AZ-ZAYDIYYA, 1985
al-Ğāmi' al-Kabīr (figs. 42-43)
AZ-ZUHRA, 1985
al-Ğāmi' al-Kabīr
Masǧid Banī Ğibrān
Masǧid al-Ḥaniš
Masǧid aš-Šayḫ
Masǧid as-Sūq

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